THE OLD TIMER'S BULLETIN

OFFICIAL JOURNAL, ANTIQUE WIRELESS ASSOCIATION, INC.

Published for the Old Time Wireless Operator, Historian and Collector

Vol. 14 **DECEMBER 1973** **No. 3**

HOUCK AWARD

HISTORICAL DOCUMENTATION

The 1973 recipient for this coveted Award goes to Gerald Tyne of Berkeley Heights, New Jersey. Tyne is recognized as the world's leading authority on vacuum tube history. His lengthy series of articles titled SAGA OF THE VACUUM TUBE is used by both amateur collector and professional engineer as THE reference when determining tube development. This effort and other work makes him most worthy for the Houck Award.

Pictured is Jerry (left) receiving the Houck Award Plaque from Elliot Sivowitch (Smithsonian Institution) who made the presentation at the A.W.A. Annual Conference.

HISTORICAL PRESERVATION

Determining the recipient for preservation of historical equipment is difficult. The Award is not given to one with the largest collection but to one who has built up an outstanding collection of significant historical items for the purpose of displaying and preserving same. The New England Wireless Museum at East Greenwich, Rhode Island maintained by Robert Merriam is an outstanding example which readily fits this category. In addition, few public libraries or universities can compete with the vast collection of rare radio books cataloged and handled by Bob's wife Nancy. Result: the Awards Committee made a joint award to the Merriams. **Congratulations !**

ASSOCIATION NEWS

FALL MEET AND DINNER

EAST GREENWICH, RHODE ISLAND

The occasion provided an opportunity for collectors to get together in New England for the first time in several years. Bob and Nancy Merriam opened the doors of the New England Wireless Museum where members viewed one of the finest radio collections in the country.

A delicious lunch followed the usual swap/sell session in the new meeting house (which is great !). Jerry Tyne and Bill Gould judged the best regenerative receiver and most unusual measuring device.

Larry Whitlock acted as moderator and kept a lively "show and tell" session moving as members related experiences in restoring old receivers. The "meet" was concluded with PORTRAIT OF A PIONEER, the life story of Elmo Pickerill.

Result: A New England "meet" will be an annual event in the future. Bob and Nancy agree...a big THANKS !

PORTRAIT OF A PIONEER

ELMO PICKERILL

The Association's latest historical documentation is the joint effort of Linc Cundall, Bob Cobaugh and Bruce Kelley. Their subject is the life of Elmo Pickerill, radio and aviation pioneer who became a Silent Key in 1968 at the age of 82 years.

OM Pickerill started his career with Dr. Lee DeForest at the 1904 St.Louis World's Fair. The next 50 years found him pioneering in radio and aviation. Wilbur Wright was instrumental in having "Pick" solo in 1910 with radio equipment making him one of the first in the world to transmit from a plane. His experiences and associations thru the years are vividly captured in pictures and tape commentary.

The show is a memorable experience particularly to old time commercial operators -- in fact, the Society of Wireless Pioneers have formed a chapter in his name !

FLASH!!! California A.W.A. Regional Meet scheduled at Foothill Museum either April 20th or 27th, 1974. Information in next OTB.

NEW GEAR AT A.W.A.

RECEIVERS: W2EB, WA2DYP, W2ZH and John Caperton.

TUBES: W2EB

TELEGRAPH: Everett Berry

WRITTEN: W2JAV, W3EFX

MISC: W3SW, W3DUG, W3AW, K2YMM, W2EB, Frank Pagano

The Association has received several new items for display. Outstanding is an exact replica (including aged wood) of Maj. Armstrong's original regenerative detector using a DeForest Audion. This rare piece was actually made by Armstrong in the 1920's for an exhibit and was presented to A.W.A. by Stu Davis, W2ZH. More on this later.

Another valuable addition to the amateur line is a DC Pilot Super-Wasp. It is the first of the two models and in time will become a classic. A.W.A. is indebted to John Caperton who also dug up an A.C. model at an earlier date.

An interesting item for the telegraph exhibit is a rare Athearn Single Line Repeater Relay donated by Everett Berry. Members attending the conference may have seen him bring it in -- a huge double ended monster. Everett has contributed any number of rare telegraph instruments to A.W.A.

Bud Waite, W2ZK, who is currently working with AWA on a new historical show donated several artifacts he brought back from the Antartic. Of great interest is a No. 6 dry cell left by Capt. Scott on his last expedition to the South Pole (1909-1913). W2ZK recovered the battery at Scott's Cape Evan's base camp. In addition, Bud gave the AWA Museum a coil from the transmitter that was used in the rescue of Adm. Byrd in 1934. More on all this later.

Change In Address?

Mail information to the Treasurer who handles current mailing list. (NOT the Secretary)

L.A. CUNDALL, W2QY
69 BOULEVARD PKWY
ROCHESTER, N.Y. 14612

FROM HEADQUARTERS

Editorial

On several occasions members attending an AWA Conference have questioned the need for a registration fee. It is obvious they have never been on a Hamfest Committee or another such event for if they had the question would not have come up.

The registration fee is the cushion that covers all extra costs and rounds off the odd numbers.

ALL meals are SUBSIDIZED by the registration fee. The added extras to meals (always a %) results in a plus odd number such as $6.33 In this case AWA charges $6 for the meal with the $.33 taken from the registration fee. The registration covers program printing and mailing costs, awards, facility rental, bus charges, etc.

In all fairness, the charge has to be a blanket fee for EVERYONE attending whether you participate in the various activities or not. If YOU think you can do a better job-- let us know for we will welcome your help in planning the 1974 Conference.....

GHOUL STRIKES AGAIN !

The above headline could apply to YOU... We believe it may have happened to a deceased member who had a choice collection. Is your collection cataloged ? Have you had it appraised ? Does your attorney and a close friend have a copy ? Do you have a will ? Will your widow allow a stranger (or a make believe friend) talk her out of your prize possessions ???

ANTIQUE WIRELESS ASSOCIATION INC.
HOLCOMB, NEW YORK 14469

"An amateur organization devoted to the history of wireless"

OFFICERS

PRESIDENT	Charles Brelsford	K2WW
VICE-PRES.	Kenneth Gardner	W2BGN
SECRETARY	Bruce Kelley	W2ICE
TREASURER	Lincoln Cundall	W2QY

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	Cliff Daykin	(3)
	Lauren Peckham	(3)
	Joe Marsey	(3)
	Dick Ransley	(3)
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	Clarence Dengler	(2)
	Larry Triggs	(2)
	Bruce Ralston	(2)
	Henry Blodgett	(1)
	Al Crum	(1)
	Harry Lott	(1)
	Harold Smith	(1)

Attorney: Sherwood Snyder W2KFU
Photographer: Al Crum W2BWK

ADVISORY BOARD

District	Name	Call
1	Bob Merriam	W1NTE
2	Bob Morris	W2LV
3	Lou Moreau	W3WRE
4	Ed Redington	W4ZM
6	Thorn Mayes	W6AX
7	Warren Green	W7JY
9	Frank Wingard	W9EWH
Ø	Joe Pavek	WØOEP

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Marion Armstrong — Clarence Tuska
Lloyd Espenschied — Geo. Grammer
Paul Godley — Harry Houck

HOUCK AWARD: Bob Morris (Chairman)
Bill Gould Thorn Mayes

AMATEUR STATION: W2AN

News Journal: OLD TIMERS BULLETIN
Editor: Bruce Kelley
Make-up Editor: Larry Triggs
Asst. Editors: Ken Gardner
Lauren Peckham
Printer: Don Ray

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HOLCOMB, NEW YORK 14469

DUES and ADDRESS CHANGES:
Lincoln Cundall
69 Boulevard Parkway
Rochester, N.Y. 14612

SPECIAL REPORT:

NATIONAL HISTORICAL RADIO CONFERENCE

Great time ! Beautiful weather ! Lots of people ! plus excellent programming! On the negative side there was a motel registration problem as result of personnel changeover from summer to regular help.

Attendance approached 300 with 232 at the evening banquet. Member were present from ALL ten amateur districts and two Canadian. Officers and representatives from other organizations were:

--American Radio Relay League:
Lou Moreau, W3WRE, QST YL Editor
Connie Mac, W3SW, Atlantic Director

--Antique Radio Club of America:
John Caperton

--Canadian Vintage Wireless Association:
Sid Prior

--Indiana Historical Radio Society:
Ross Smith

--Morse Telegraph Club:Stu Davis,W2ZH

--Old,Old Timers Club:Andy Davis,W8TE

--New England Wireless Museum:
Bob and Nancy Merriam, W1NTE

--Quarter Century Wireless Assn. Museum:
Clarence Seid, W2KW

--Radio Club of America: Harry Houck

--Society of Wireless Pioneers:
Charlie Maass, W2RTV

--Smithsonian Institution:
Elliot Sivowitch, K3RJA

Other than for one last minute cancellation, all programming went according to schedule. a big THANKS to all the Speakers and Committee members who kept things going for 2½ days !

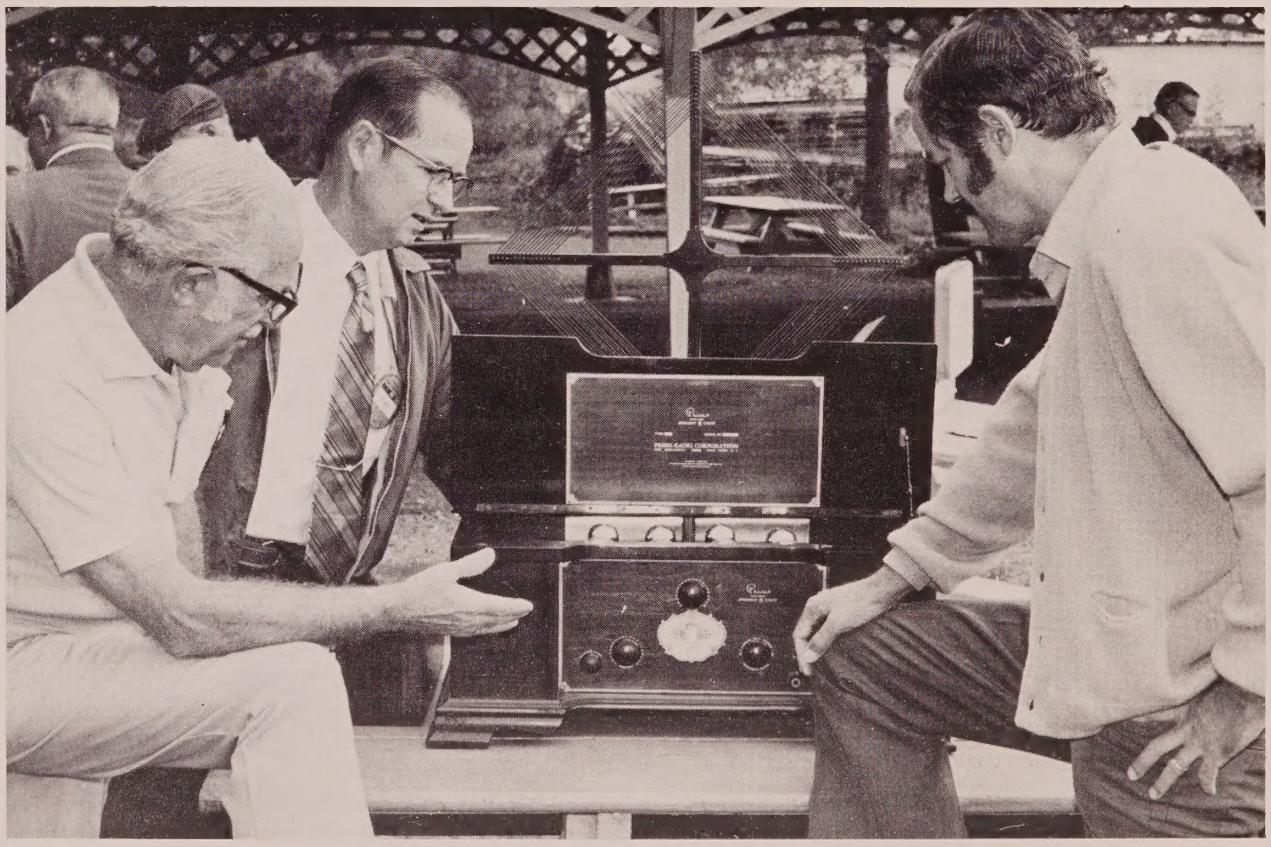
HIGHLIGHTS:

Jerry Tyne receiving the Houck Award for historical documentation....

Bob and Nancy Merriam receiving the Houck Award for historical preservation.

Treasurer Cundall giving a $1 refund on the Saturday dinner due to change in menu (remember, we're a non-profit organization !)

Chairman Kelley "blowing his top" when he heard someone had stolen a Federal receiver at the auction. (Fellow member had inadvertently picked up the wrong set and placed it in his car without checking. Later returned with considerable embarrassment.)



Sid Prior (Secretary Canadian Vintage Wireless Assn.), Ross Smith (President of Indiana Historical Radio Society) and Morgan McMahon (Publisher "Vintage Radio") admire Everett Berry's PRIESS STRAIGHT EIGHT receiver during swap/sale session.

HIGHLIGHTS:

Leo Gibbs (W8BHT) and Fred Hammond (VE3HC) winning the Quiz Panel Contest.

Bob Morris (W2LV) carrying the 150 lb. transmitter he received for winning the OT Transmitting Contest.

Antique Radio Club of America judges with the difficult task of selecting a large array of rare and beautiful receivers.

Re-living 60 years if radio and aviation pioneering with Elmo Pickerill.

Trying to out-guess the experts during the Vacuum Tube Symposium.

Talking with friendly author/publisher Morgan McMahon of "Vintage Radio" book fame.

Taking color pictures of sailboats on Canandaigua Lake from the motel dock.

Swapping and selling hundreds of old receivers packed away in car trunks.

A big surprise when Clyde Richelieu, W9JS, whipped out his banjo and livened up the dinner with some old time banjo music and singing.

Members are urging the Committee to return next year -- same time and place..

Location and date for 1974 Conference will be decided at Annual Meeting.

---NOTICE---

The OLD TIMERS BULLETIN is published approximately four times a year at Holcomb, N.Y. by and for members of the Antique Wireless Association, Inc., a non-profit historical society chartered by the State of New York.

This publication does not accept paid advertising nor is it liable in any way in any buying or selling transaction entered into by its readers as a result of its contents. The Old Timers Bulletin is available only as part of the Antique Wireless Association membership fee and its issuance is subject to change as to frequency, content and size from time to time.

AWA NETS

PHONE -- 3902 KC.

Tuesday: 8:00 P.M.

Sunday: 12 Noon

CW -- 3584 KC.

8:00 P.M. First Wednesday of each month

4:00 P.M. Daily

All times E.S.T.

Members of SOCIETY OF WIRELESS PIONEERS at Friday evening gathering. Distant members attending include W4DBT, W6AX and W9JS. Other members were at the Conference but were not present when picture was taken by SWP member W2BWK.

Members of Quiz Panel: Jack Allison and Bill Laverty, Burton Wells and Sid Prior, Leo Gibbs and Fred Hammond, Brad Burnham and Al Fitch with Ross Smith (not see) as Moderator. Surprisingly, the four teams averaged fairly close with a range of 50 to 62% correct answers.

Members of MORSE TELEGRAPH CLUB gather at the Conference. Seated l. to r.: Fischer (WA2QGV), Moreau (W3WRE), Davis (W2ZH) and Raser (W2ZI). Standing: Gould (K2NP), Morris (W2LV), Gardner (W2BGN), Goodnow (W1DM), Kelley (W2ICE)

RECEIVER CONTEST

WINNERS - 1973 CONFERENCE

CLASS I Regenerative Receivers

--1st Ralph Muchow (DeForest Regen.)
--2nd Larry Whitlock (Marconiphone V2)
--3rd John O'Bannon (Zenith 4R)

CLASS II TRF Receivers

--1st John Johnson (Silver Ghost)
--2nd Jim McBurney (A-K Radiodyne 12)
--3rd Bill Lighfoot (Freshman Master.)

CLASS III Superhets

--1st John Caperton (E I Leutz)
--2nd Alfred Sayer (Nine-in-Line)

CLASS IV DeForest Commercial Equipment

--1st Ed Raser (Syntonizer and Detector)
--2nd Rod Melhuish (CF-99 Transmitter)
--3rd John Caperton (15 panel receiver)

CLASS V DeForest home BC equipment

--1st Lauren Peckham (Everyhome & Amp.)
--2nd Ralph Muchow (D-9)
--3rd Floyd Bennett (Everyman)

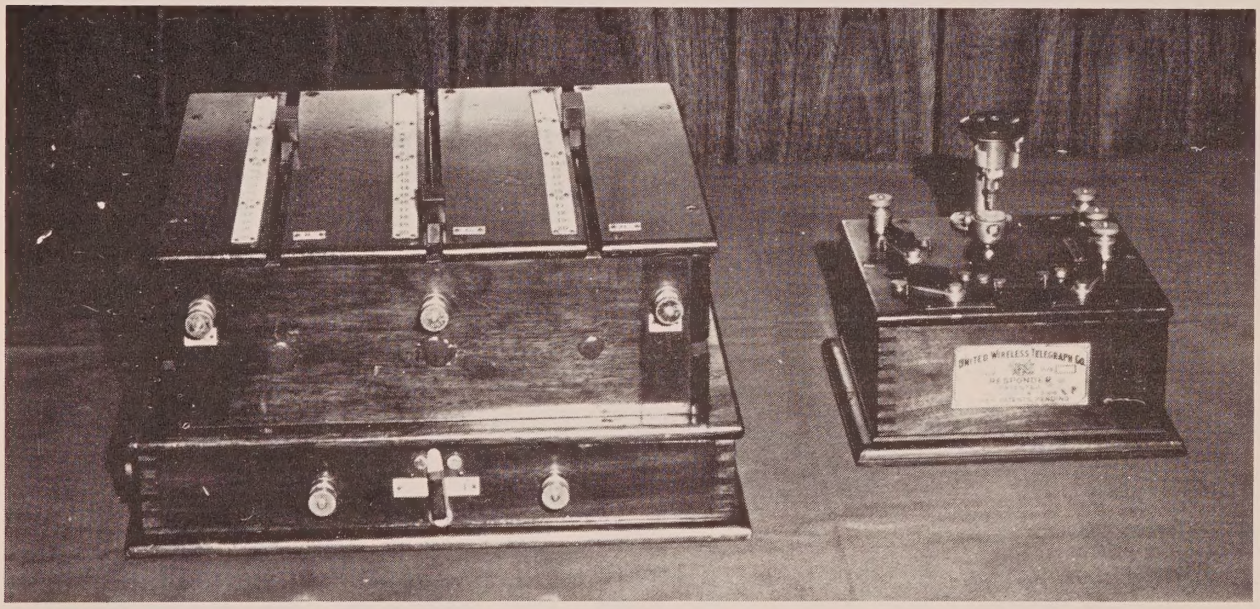
CLASS VI DeForest equipment

--1st Stu Davis (DeForest Audion rcvr.)
--2nd Lauren Peckham (Oscillion Lab.Osc.)
--3rd Ralph Muchow (Audio Amp. M200)

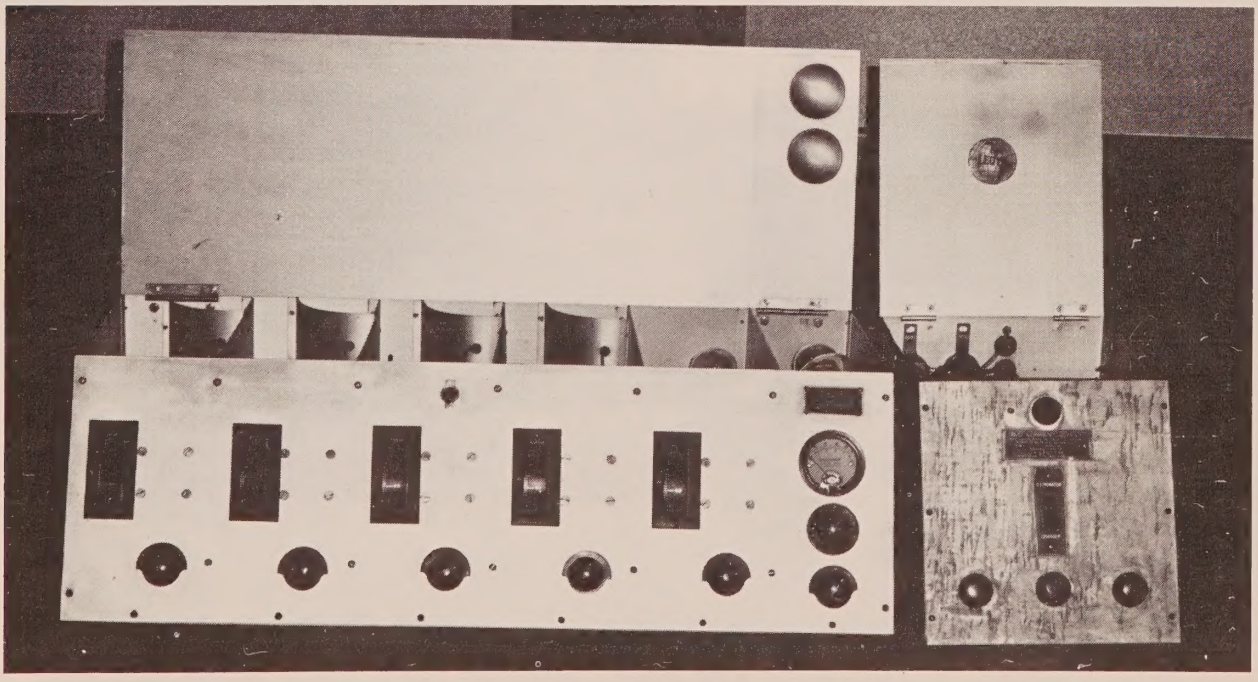
JUDGES:

Mel Comer (Pennsylvania)
Russell Hanselman (Illinois)
Paul Giganti (California)
Ralph Williams (Pennsylvania)

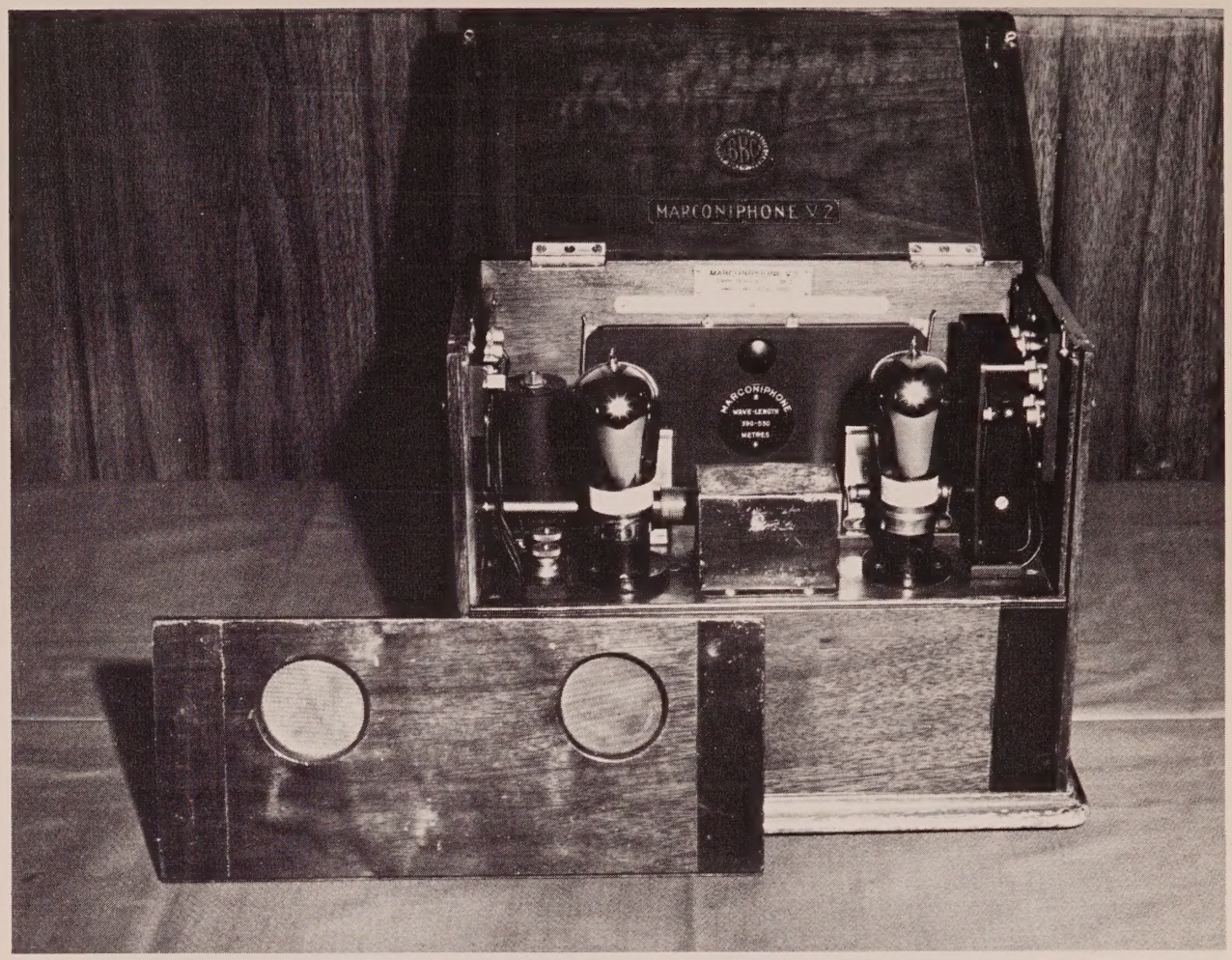
Note: Excellent photographs of prize-winning receivers by Al Crum, W2BWK.



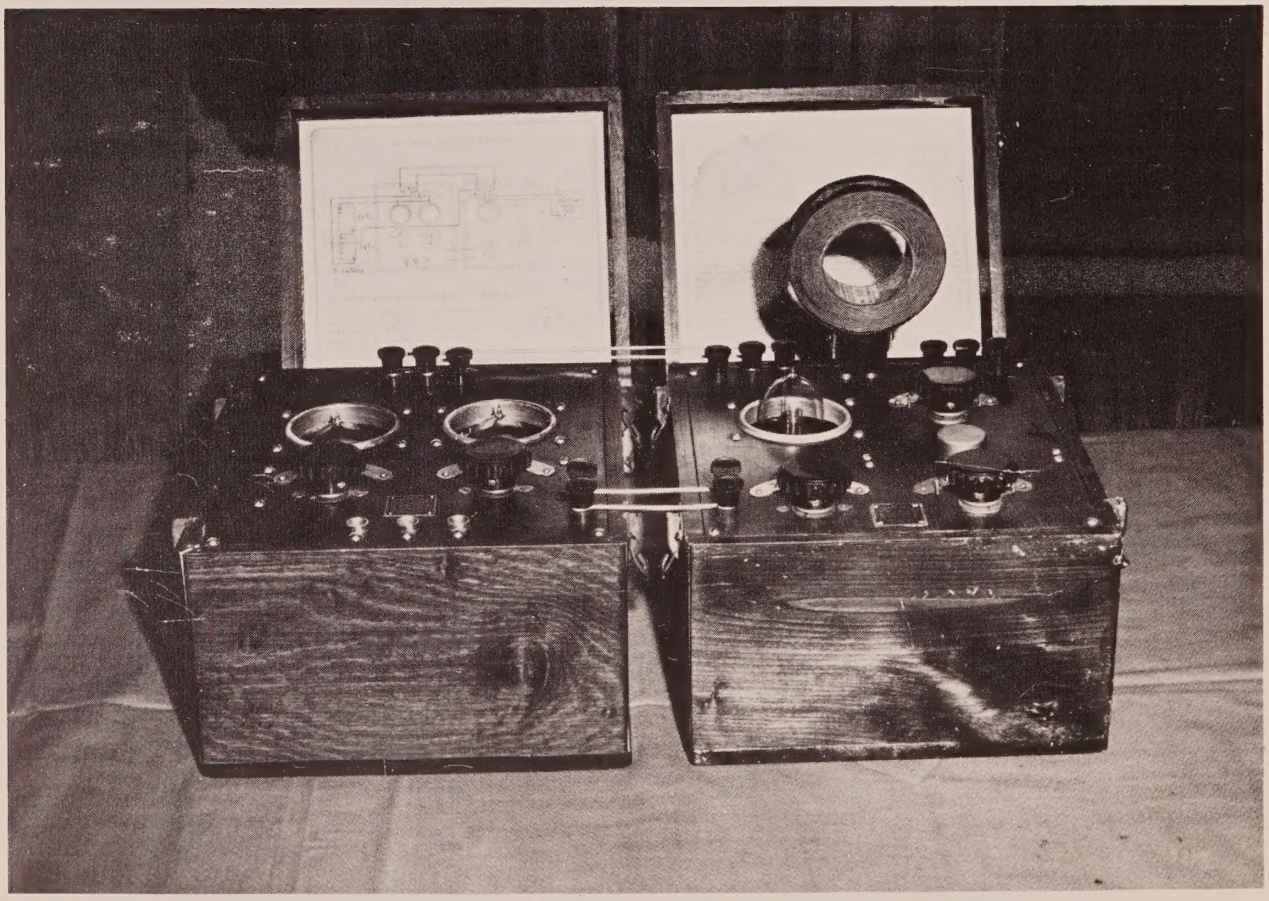
1st Prize -- Class IV DeForest Tuner and Syntonizer Detector



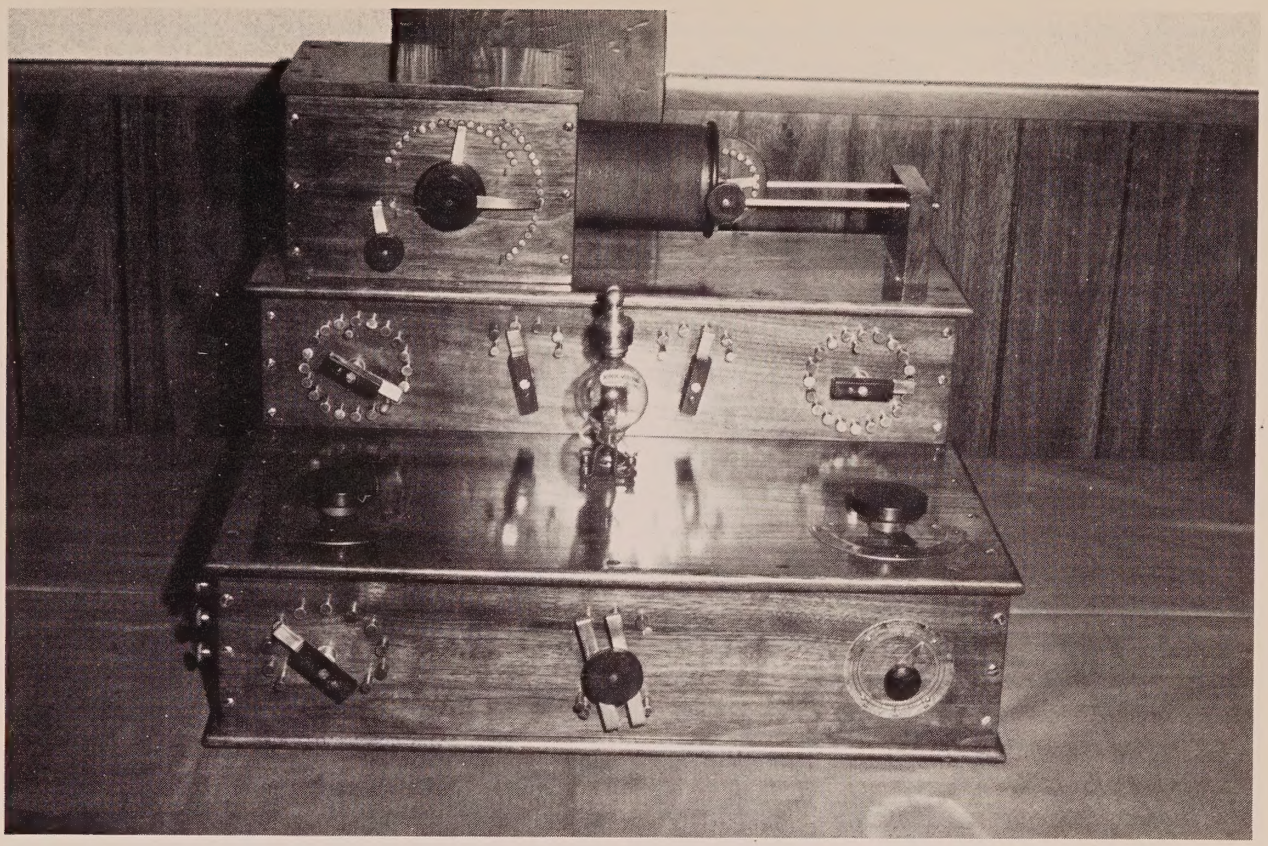
1st Prize -- Class II Leutz Silver Ghost Tuned RF Receiver



2nd Prize -- Class I British made Marconiphone Regenerative V-2 Receiver



1st Prize -- Class V DeForest "Everyhome" Detector and 2 Stage Audio Amplifier



1st Prize -- Class I DeForest Regenerative Receiver

NAVY NUMBERING SYSTEM

Corrections and explanation of Navy Type Designations on page 576 of the book titled "History of Communication-Electronics in the U.S. Navy".

Designations:

CAJ-- Holtzer-Cabot Electric Co.
CAN-- Sangamo Electric Co.
CAY-- Westinghouse Electric Manu. Co.
SE -- Bureau of Steam Engineering, U.S.N.

The "number system" started in 1916 but it was mid 1917 or later before fully applied. The above changes brings the list up to 1919. The system was continued at least through WWII with numerous other changes.

All numbers were originally assigned by the Bureau of Steam Engineering as they were in charge of furnishing radio equipment for the Navy in the early days. All numbers for equipment made from Navy drawings had the prefix SE before the number.

All numbers assigned to private companies for manufacture with their designs had the letter "C" and an additional letter or two designating the company. As an example: early condensers made by Dubilier Company could be marked CD-53.

All type numbers ran in one continuous series numerically whether assigned to Navy Yards or to private companies.

The fact that a certain number assigned to one company appears on a name plate does not necessarily mean that this company actually made the piece of equipment, but that the original design was made by that company and accepted by the Navy. After that, when bids were asked for construction and furnishing the equipment, some other company may be the low bidder. So once the type number was assigned, it was used on that particular apparatus no matter who actually made it. This has been confusing to many present day collectors of old gear

In the case of sub-contractors, it was customary that the prime contractor's number be used and on one corner of the name plate an additional letter be stamped so as to identify the sub-contractor.

If a modification of the original drawing was made, the letter "A" was added immediately after the number. Thus, a name plate for a $\frac{1}{2}$ Kw. submarine transmitter for which Emil Simon was prime contractor and Kilbourne and Clark the actual manufacturer and there had been one major change on the blue print, the Type Number would be: CE 606A and in one corner of the plate would be stamped "K" for Kilbourne & Clark.

--Bob Palmer, W7RD

OLD TYME HAM ADS

OLD TYME ADS are FREE to members who are interested in collecting and restoring historical equipment as an amateur. They are not to be abused.

RULES FOR ADS:

1. Material must be over 25 years old.
2. Ad MUST be written on separate sheet of paper --- not part of letter. For acknowledgement -- send S.A.S.E.
3. Give full address, zip number and call letters (if any).
4. AWA will not print repetitious ads or ones indicating regular sale for profit.
5. The Association is NOT responsible for any transaction.
6. AWA retains the right to reduce size of ad.
7. All ads must be received 5 weeks prior to mailing date.
8. Mail to Antique Wireless Assn. Main Street, Holcomb,N.Y. 14469

WANTED: A large tuning knob for a Garod V receiver -- see page 132 of McMahon's "Vintage Radio". Also need schematic for Thompson 570 Receiver. Dan Gaidosz, 342 West River Rd., Orange, Conn. 06477

WANT: coils for National SW-3 (2.5 v. type) and loop for Radiola. G.V. Highmark, 525 9th Ave., Two Harbors, Minn. 55616

SELL "Lacquer-Stik" for filling engraved panels and dials. $1 each or two for $1.50 ppd. Alan Doughlas, Box 225, Pocasset, Mass. 02559

NEED - switch for Atwater-Kent breadboard. E.W. Lindsay, 21 Hillcrest, Ponca City, Oklahoma 74601

WANT: 3/4" knob for pot on Kennedy 110, manual or instruction sheet for Ultradyne I2, horn for W.E. 10D speaker, pre-1925 test equipment, tube testers, xtal sets and 1 or 2 tube sets. Swap L&N Type K2 pot, and ac type tube testers. Lane Upton, 526 11th Ave., Salt Lake City, Utah 84103

WANTED: "Skindervicken" button. Write Fred Penard, 65 Maple St., Norwood, Mass. 02062

WANT: Complete set of pug-in coils or coil data for 1933 Hammarlund "Comet Pro" receiver. John Alley,W1DMD, 48 Judson St., Raynham, Mass. 02767

WANTED information for re-building a Reinartz 3 tube receiver and American Special (1 tuber) made by American Radio & Mfg. Co. Pictorial layouts, schematics, etc. Ross Smith, 1133 Strong Ave., Elkhart, Ind. 46514

WANTED: Old time (1934-35) HRO rcvr. also Federal AFT No. 66 as used in Federal 61 receiver. AFT must be OK. Ken Conrad, W2IIE, 5482 Crittenden Blvd., Akron, N.Y. 14001

TRADE: National Electric Supply Co. (NESCO) CN-115 receiver (Ser. No. 4), A-K Mod. 10 Radiodyne (p. 74 Vintage Radio). Want WWI or earlier sets of similar value. Want Kennedy 110 or 220 for A-K. R. Brewster, 1 Concord Rd. Fishkill, N.Y. 12524

TRADE: Radiola III in good condition working with WD-11 tubes if desired. Want early battery radio other than RCA or AK. Leland Smith, W5KL,Box 38-B Route #3, Jasper, Arkansas 72641

FOR SALE: A-K Mod 9 (variometer model) instruction brochure. 50¢ each or 3 for $1.00) This is a set that is not well known among collectors and I thought collectors might like a copy of this rare brochure. Paul Giganti, W6GVY, 2429 San Carlos Avenue, San Carlos, Calif. 94020

WANT: Horn for WE 10-5 spkr, case for AK-30, socket ass'y/rheostat/2 large and 2 small knobs for Zenith 1R, xmfr and socket for F.E. NR-5, (2) AFT for Kennedy 525 amp. B.T. Wooters,W5KSO, 8303 E. Mansfield Ave., Denver, Colo. 80237

WANTED: Radiola IV chassis for terminal strips, wiring and hardware only.Write Serge Krauss, 141 Homan Ave., Elkhart, Indiana 46514

WANTED: Loop for DeForest D-10, bell for Music Master horn spkr., volume control knob & shaft for Gilfilan GN-5, case for Aeriola Sr., 14" horn for Magnavox driver R-3,base for Radiola horn. For sale: Aud. freq. meter in wooden case (General Radio) $15.00 you pay shipping. Glenn Eckley Jr., 1605 Inverness Rd, Apt. D, Baltimore, Md. 21222

TRADE: Philips Battery Eliminator with external rectifier tube for amplifier unit used with Radiola III-A. Tubes not necessary. Fin Stewart, 673 Great Western Way Highway, Faulconbridge, N.S.W. 2776 Australia

WANTED TO BUY: early issues of "Radio", "Radio News", "Popular Radio". Also need Pacent detector, AK variometers, 1 tube regenerative sets. Have some pre-1925 components to swap. Quote or SASE with needs. A. Gianascol, M.D. 1077 Cass St., Monterey, Calif. 93940

WANT: Good picture tube (3KP4) for Pilot TV Model TV-37. Don Steger, 4821 Rockland Way, Fair Oaks, Calif. 95628

WANT-- pay cash -- double button W.E. microphone used in BC work. Must be mounted in case or ring. Wilbur Kurtz, P.O. Drawer 1734, Atlanta, Ga. 30301

WANT: Any breadboard AK, also Radiola II and IIIA. Write: John Nowacki, W1GWM, Box 304, Kennebunk,Maine 04043

TRADE: Nice National SW-3 for nice Model H.R. Clapp-Eastham. Also have Radiola III and National One-Ten for trade or cash. Want crystal sets and/or 1 and 2 tube sets. Lew Elias, W4DBT, 3919 Poindexter Drive, RFD #8, Winston-Salem, N.C. 27106

WANTED: books on history of electricity and electronics -- particularly Archer's "History of Radio". Will buy or trade for old books or tubes. Henry Davis, K4IM, 1201 Riverside Drive., Indialantic, Fla. 32901

TRADE or SELL: Tesla coil mounted on 68" x 23" base with old spark transformer 20 kv @ 2½ kva, condenser bank of 4 Pyranols .25 mfd- 7200 volts in series mounted in an oak box. Write: Stan Johnson, 3321 Eastbrook Drive, Ft. Wayne, Ind. 46805 (W9FIW)

WANTED: cabinets for RA-10 and Freed-Eiseman NR-7, Type 15GP22 color CRT for 1954 Stromberg-Carlson TV, three thimb screws for securing lids on Kennedy 220 & 525 cabinets. AL Jochem, 2047 College Ave., Quincy,Ill. 62301

WANTED: Cardwell 21 plate rcvg. cond., Na-Ald 3 & 4" dials (#3043), porcelain beehive insulators, copy of dial calib. for Nat. NC-101X, "1920's" type 0-100 ma. meter, B&W "Baby" 160 mtr. coil and pre-WWII Bliley xtals. Lou Vermond, VE3BDV, 541 Soudan Ave., Toronto 7, Ontario, Canada

WANTED: Any information on the Amplifex "6" receiver. It is a superhet made after 1922. No other info. Also need resistors for same. Boy Burritt, North Ferrisburg,Vermont 05473

HALLICRAFTER collectors: Model SR-75 limited production trans.-rec coils for 10-11 to 80. Write: Don Guptill, W1AOG, 17 Park St. Court, Medford, Mass. 02155

NEED technical data on Tru-Sonic speaker Model P52A circa 1935. Also sources for stock parts to restore 1930 and 1940 radio sets plus literature on Scott receivers. Robert Fabris, 3626 Morrie Drive, San Jose, Calif. 95127

WANTED: Complete sets that can be rebuilt and any old parts including cabinets and panels for Radiolas III, III-A and IV, Crosley 50, 51, 52. Harry Watkins, WB4CRH, 2168 Greene St., Augusta, Ga. 30904

INTERESTED in buying RCA Model 140, D22-1, QU-8; Philco Models 680, 37-690; Zenith Model 1000Z. Douglas Houston, 3960 Three Mile Drive, Detroit, Mich. 48224 (313-TU2-1836)

HELP ! need panel voltmeter for Stromberg Carlson 523 neutrodyne, also tuning dial and knobs. Art Harrison, 1021 Falcon Dr.,Columbia, Mo. 65201

TRANSMITTER BUILDERS: for sale pair of 3" Westinghouse 1000 ma DC and 10 amp AC meters, RCA UT541 50 w. sockets, WSA Faradon micas .002 @ 3000v and 6000v., .0003-4-5 @ 7500v (all new in 1922 boxes),WE-211D in orig. box, Jewell 3" 3 amp AC unused. No sales, will trade all very reasonably. Alan Douglas, Box 225,Pocasett,Mass. 02559

AVAILABLE: Several sets of 3 postcards of Norwegian Resistance Museum, Oslo, Norway showing radio gear and station used by WWII underground. Price $1 for 3 cards (at cost). Julian Jablin, W9IWI, 9124 N. Crawford Ave., Skokie, Ill. 60076

WANT: National SW-3 with coils and power supply. Must be in good condition. Need data for building helix and rotary spark gap. Richard Cohen, 1883 Ravenwood Way, NE, Atlanta, Georgia 30329

WANTED: National FB-7 receiver with coils in very good condition and operating. Please advise condition and price. Bert Martin, K2LBB, 3646 Rath Avenue, Endwell, N.Y. 13760

SWAP--want restorable AK-5, 5 tube AK 10B in excellent condition plus AK-9 restorable. Swap Splitdorf R-500 in original condition. Pictures traded before deal firmed. No tubes swapped. John Noble, 3608 Neyrey Drive, Metairie, La. 70002

SALE: Portion of Vol. 15 Rider's. $1 per manufacturer section. Want: Loan of Scott remote control box shell as pattern. Correspondence with other Scott collectors. Bob Fabris,WA6NNB, 3626 Morrie Dr.,San Jose,Calif. 95127

WANT: AK breadboard sets, complete or partial also parts for breadboard. Also interested in AK Type 11 coupled circuit tuner. Buy or trade. Arnold Schwartz, WB6PJC, 7055 Lennox Ave., Van Nuys, Calif. 91405

WANT: complete tuning knob for 6 tube Day-Fan as shown on p. 128 Vintage Radio. For sale: 6 tube inductively tuned Kellogg 507 in good condition. S.L. Sargent, RFD #5, Box 517, Laconia, New Hampshire 03246

NEED: to complete old time station, 80 meter coils (bandspread) for National SW-3 receiver. Fred Rice, WA3KIO, 1933 Greymont St., Philadelphia, Penna. 19116

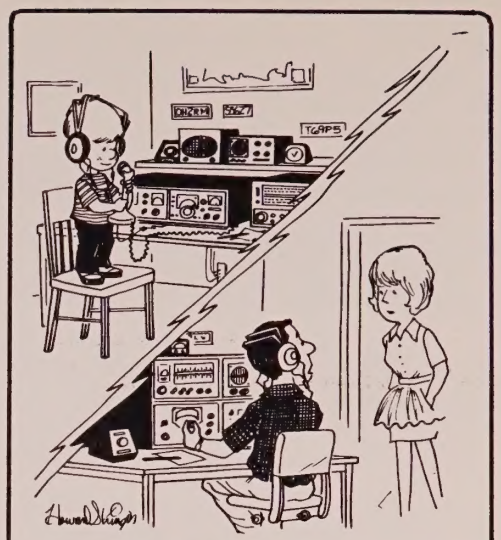
FOR SALE: May 1917 QST, make offer. 18 inch W.E. Co. cone speaker $18., DeForest spherical Audion with single plate and grid, filament OK. Write: Warren Green, W7JY, 7202 N. Mercer Way, Mercer Island, Wash. 98040

FOR SALE: Radiola 30A, Freed-Eisemann 215 in Victrola cabinet and other vintage sets. Send SASE for List. Al Germond, 2218 Holmes, Springfield, Ill.

WANTED: Federal Junior two stage amplifier. Write: Harry Williams, WØINI, Pleasant Hill, Missouri 64080

TRADE: few dupes 1923-1926 Radio News for missing ones same era. Want coils for old National SW-3 or SW-5. Clarence Filley, W7KE, 1109 S. 2nd, Hamilton, Montana 59840

WANTED: Atwater-Kent Mod. 36 chassis complete with tubes. Have cabinet, front controls and 4 gang var. and wish to restore..or will trade what I have for antique set or parts. Leland Smith, W5KL, Box 38-B, Rte.3, Jasper, Arkansas 72641



"This is incredible... I've contacted a Captain Lightning in his Mars space ship."

The above cartoon isn't exactly historical but it was too good to pass up. Credit goes to cartoonist Howard Stringer where it appeared in a recent issue of Jim Fisk's magazine HAM RADIO.

Getting back to the old days, we reprint one below taken from an early radio magazine----

The Buzz

Father—And what is this little block with the two wires connected?
Son—Oh, that's the "B" battery.
Father—So that's where you obtain the "honeycombs" you are always talking about.

1972/1973 ROYAL SIGNALS AMATEUR RADIO SOCIETY AWARD ----------

was recently given to Julian Jablin, W9IWI for the best article in their publication MERCURY. This is the first time an American has received the Award. Congrats Julian !

Alexanderson, 95, an Inventor With Patent Patience

By LIZ ALLEN
Gazette Reporter

Dr. Ernst F.W. Alexanderson of 1132 Adams Road, at 95 years of age is the proud possessor of 321 patents for radio, television and motor controls. But one patent, awarded in June, is most meaningful to the aging inventor because it is the only one that belongs to him and not to General Electric.

* * *

Dr. Alexanderson, who was elected to the Royal Academy of Science in Sweden to select Nobel Prize winners in science, was employed with General Electric from 1903 until 1955.

At that point in his career, and at the age of 77, he joined the newly-formed Mohawk Development Services and began to work on the invention in 1956 which won him his newest patent — for motor control.

Alexanderson worked for years on the device and began testing it in 1966. The day after the first successful test, the inventor was taken to the hospital for the beginning of two years of illness.

Finally, in 1968, the inventor was able to file for his long-awaited patent. In a unique move, Alexanderson wrote his own application. The complicated and legalistic forms generally are completed by patent lawyers — but familiarity with more than 300 other patents qualified Alexanderson to write his own.

The Swedish born and Swedish and German educated electrical engineer was a pioneer in fields of communication. His invention of the high-frequency alternator made possible transoceanic radio; his early work led him to give the first public demonstration of television on Jan. 13, 1928 in Schenectady and his invention of the color television receptor paved the way for color television.

Alexanderson said "no one person really invented television.... it was on the general consciousness that TV would soon follow radio."

"I started to work on television to make a reality of what was just a general dream."

Alexanderson did work in other areas, including radio telephone, motors, generators, electric traction, electric ship propulsion, vacuum tubes for radio and power rectifiers, electronic circuits and radar.

After coming to the U.S. in 1902, working for GE for 52 years and earning them 320 patents, at 95 he finally has received his own "personal patent."

Recent reprint from Schenectady (N.Y.) GAZETTE from Ralph Yeandle

Communications news

NEWS TODAY --- HISTORY TOMORROW

Intelsat IV Satellite

When the fifth Intelsat IV communications satellite recently achieved a successful 22,300-mile-high orbit over the Atlantic Ocean, it marked a decade of progress since space scientists proved that satellites could appear to "hover" in the sky by synchronously matching the earth's rotational speed.

The latest Intelsat IV was launched from Cape Kennedy in Florida exactly 10 years to the day that Syncom, the world's first synchronous satellite, became operational.

It was on August 23, 1963 that President Kennedy officially inaugurated the new age of synchronous satellite communications by speaking by telephone across the Atlantic to the Prime Minister of Nigeria via the 147-pound, single-channel Syncom, launched July 26, 1963 by NASA.

Today five 3,100-pound Intelsat IVs, each with a capacity to provide an average of 5,000 two-way telephone calls or 12 simultaneous color television programs, are operating in synchronous orbit over the Atlantic, Pacific and Indian Oceans, effectively linking most of the world's population.

The latest Intelsat IV, the fifth to be launched and positioned successfully in five attempts, was developed and built by Hughes Aircraft in El Segundo, California, and a team of subcontractors from Europe, Japan and Canada for the 83-nation International Telecommunications Satellite Organization, managed by Comsat.

The new satellite underwent two weeks of tests before it was placed in commercial service. By the end of this year 91 antennas at 73 earth stations in 55 countries are expected to be operating with the five Intelsats.

The first two Intelsat IVs were launched in January and December 1971 over the Atlantic to provide commercial operations between the United States and Europe. The third spacecraft was launched over the Pacific in January 1972. The fourth was launched last June over the Indian Ocean. Each satellite has a design lifespan of seven years.

The satellites have brought to the world's living rooms live color television coverage of such historic events as three Apollo moon walks, President Nixon's visit to Peking, the Munich Olympic Games and celebrations of the 2,500th anniversary of the Persian Empire.

Reprint from COMMUNICATIONS NEWS

FCC Reports Record Revenues for the Three TV Networks

Revenues and profits of the three national television networks and their owned and operated stations showed substantial increases in 1972.

Figures released recently by the FCC indicate the net broadcast revenues of the television networks (ABC, CBS and NBC) and their 15 owned and operated television stations were $1,598.3 million in 1972, up 15.9 percent from 1971. Profits (before Federal income tax) increased 47.2 percent to $213.4 million.

A NEW VOICE ON VLF

For those buffs who have become despondent over the growing preponderance of unidentifiable, soul-less FSK on VLF and LF, here is new hope.

As of late August, construction has been virtually completed and experimental test transmissions are being conducted from the new "DIDS" (Decision Information Distribution System) transmitter near Edgewood, Md.

This station is being built by Westinghouse for the government as the pilot installation of what is planned to be a network of half a dozen or so such stations, capable of around-the-clock nationwide coverage.

Equipped for voice, FSK and tone - coded transmissions, the system has the capability, inter alia, of turning on properly equipped home receivers for immediate reception of broadcasts concerning an emergency of any description. (Eventually, it is envisioned that TV receiver manufacturers may be requested to equip all new sets with such a device; the price bracket of TV receivers is considered capable of accommodating the nominal additional cost.

The station operates on a frequency of 179 kc/s, and AM voice modulation is used for identification with the call letters WGU-20. For the time being, test transmissions are carried on during the evening hours (usually at some time between 8 and 10 PM EDT) on an unscheduled basis.

The station uses an efficient umbrella type antenna with a 700 foot tower and puts a strong signal over the northeastern quadrant of the country. The antenna power is 50 KW. and the transmitter is ENTIRELY SOLID-STATE !

(Art Goodnow, WlDM)

WITH THE COLLECTORS

Lauren A. Peckham
Ormiston Road
Breesport, N.Y. 14816

DEX DEELEY (Rochester, N.Y.) added two nice Freed-Eisemann sets to his collection: a NR-5 and a Model 10.

FLOYD BENNETT (Kirkville, N.Y.) is very pleased with a loose-coupler he found at the swap/sale session held at the recent meet at Bob Merriam's.

STAN JOHNSON (Ft. Wayne, Ind.) found some fine items he says are available for swapping: Federal 61, IP-501, a Crosley Pup and a Grebe CR-9.

JOHN WOLKONOWIZ is a new member in Worcester, Mass. John has about 60 sets and is also interested in tubes.

BOB MEISENHOLDER is another new member out in the state of Washington. He is a professor of law at the University of Washington and has historical radio and set collecting as a hobby.

CLARENCE FILLEY (Hamilton, Montana) purchased a Michigan 1 tube set, a Kennedy 22, Zenith 3R and parts at a recent auction. He would like to correspond with other AWA members in the northwest part of the country.

FRED RICE (Philadelphia, Pa.) has a National SW-3 and a very nice AC set made by Steinite.

BASIL ABBOTT (Mechanicsville, Va.) sent us a nice photo of an early W.E. #360 horn speaker using a morning glory type design. His collection also includes a one-dial Mohawk receiver and a Crosley 51A amp.

STAN ATKINSON (Cranston, R.I.) attended an auction recently where he saw one of the little surplus WWI portable spark transmitters for sale (SCR-65). The set sold surplus back in the 30's for $4.95 The dealer wanted $250.00 !

JOE PAVEK (Minneapolis, Minn.) has some new ones: a Scott Shield Grid 7 like new with bright copper cans, a Westinghouse Mod. 53 (3 tuber made in Canada with 199's) plus a couple beautiful xtal sets and coils.

AL MARCY (Eau Gallie, Fla.) found an old classic -- a Super Skyrider (1937) which he has in perfect working order.

WES CHATELLIER (Baton Rouge, La.) is another new member and collector who does service work. Wes is slowly building up a collection with a rare Federal Jr. crystal set being his latest.

AL JOCHEM (Quincey,Ill.) really hit the jackpot with the addition of a Kennedy 220 with 525 amp., Kennedy 281, AK-10 and a Radiola 25 to his collection.

GORDON EKLUND (Prospect, Ky.) sent us nice photos of his Philco "Baby Grand" and Franklin 101 cathedral radios. Drop him a line for more info on source of busbar wire (send SASE). He can also give info on restoring loop on DeForest D-7 and D-10 sets.

GAY EWING (Breesport,N.Y.) purchased a Radiola V at the Annual AWA Conference Auction.

VINCE HIGHMARK (Two Harbors,Minn.) located an impressive National AGS-X set with 9 sets of coils plus a National FB-7

LEO GIBBS (Kettering, Ohio) has added a 5 tube Gilfillian TRF to his collection.

GUY MARTIN (Glendora, Calif.) found lots of early wireless gear this year: Paragon 2-5-U xmttr., CW-1058 Trans-ceiver, Clapp-Eastham receiving xfmr and a Murdock "sliding book" condenser.

FRANK PAGANO (Brooklyn, N.Y.) found an early spark induction coil at a flea market held at Shea Stadium !

LAUREN PECKHAM (Breesport, N.Y.) is happy with a swap deal which yielded a SCR-65 spark xmtr.

ALEX BLACK (Syracuse, N.Y.) picked up a set of Rider Manuals and a Ben receiver built in Freeport, L.I. Does anyone have information on this set ?

DAVID PECKHAM (Breesport, N.Y.)is busy expanding his collection. Latest finds are early tubes and an AK 33.

PETER KAILUS (Western Springs, Ill.) is a Gernsback "buff" and collects all available material published by Hugo. He also looks for defunct radio stock certificates.

DAVE McKENZIE (Indianola, Iowa) is about to restore a MIGNON RADIO RECEPTOR Type RD-1. He would like to correspond with others who may have a similar set.

BOB McINTYRE (Winnipeg, Manitoba) reports that old sets are as high there as they are in the States. As an example he saw an AK-20 for which they were asking $200 !

FIN STEWART (Faulconbridge,Australia) acquired a rare Philips 211-A and 211-B transmitting tube. The tubes resemble the DeForest Singer Oscillion but have bayonet bases at each end. Fin visits other collectors in Australia including one to Frank Castle (Newcastle) which was the highlight of the year.

AL CANNING hit the headlines a few months ago (Sentinel Star,Orlando,Fla.) with a well written article telling of his collection. Congrats Al !

BOB FABRIS (WA6NNB) is a West Coast classic collector specializing in Scott sets. He is currently rewiring a De-Luxe model by rewiring it and having certain sections re-chromed.

FLOYD LYONS (San Francisco, Calif.) just acquired something unusual: an autographed photo of Dr. Lee DeForest circa 1910.

RAY FISHER (Charleroi, Pa.) is a tube collector but didn't pass up a mint Kennedy 281.

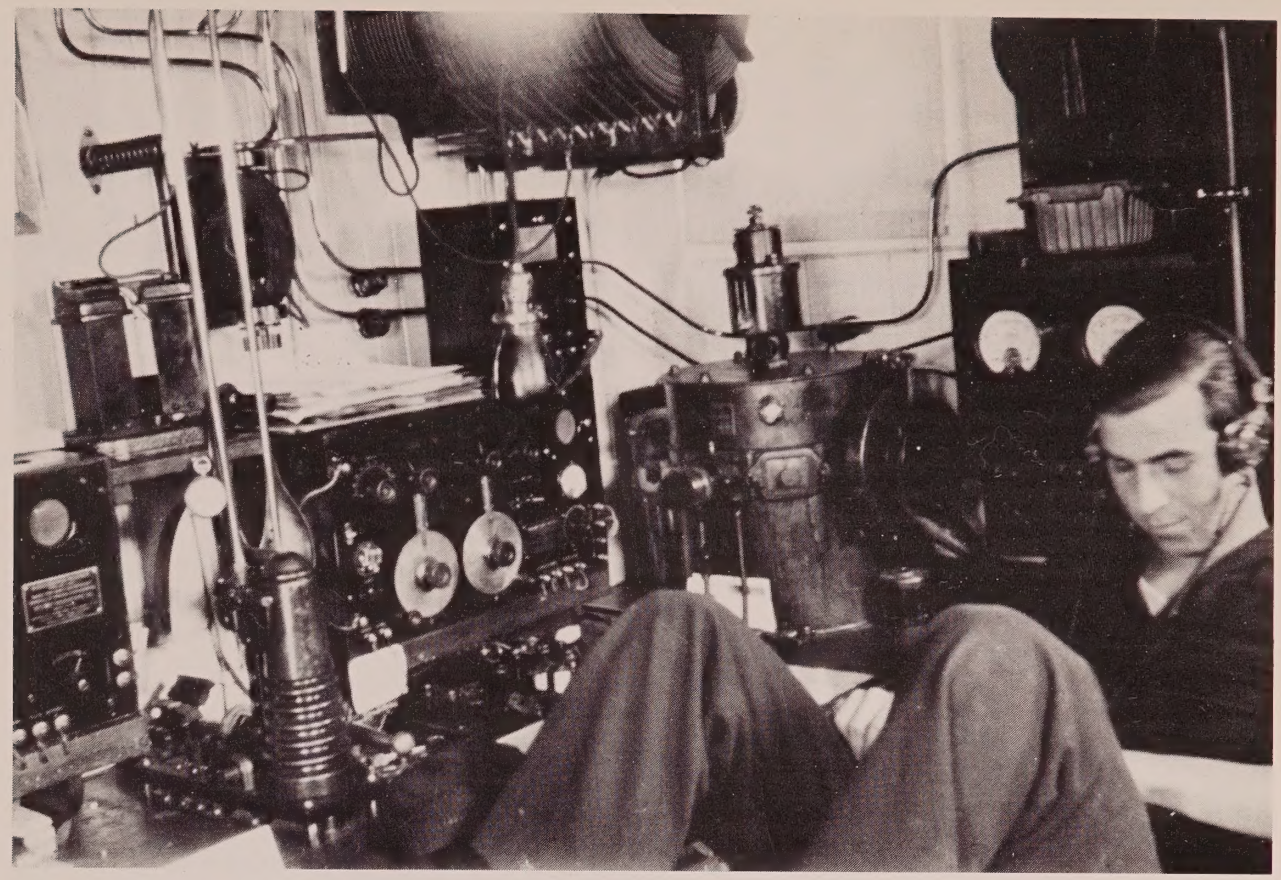
LEONARD KREISLE (Austin, Texas) is a new member and a Prof. of Mechanical Engineering at University of Texas. Like Prof. Meisenholder (mentioned elsewhere in this column) he has an interest in early radio as well as early phonographs -- both cylinder and discs.

WOODY COOK (Greenwood, Ind.) concentrates on early amateur equipment including spark sets. He hopes to have some of the gear on the air soon. Call: W9GJS.

NOTICE: Write and tell me what you're doing in the collecting field-- let us build up this column. Our next dateline is Feb. 15
--- Lauren Peckham

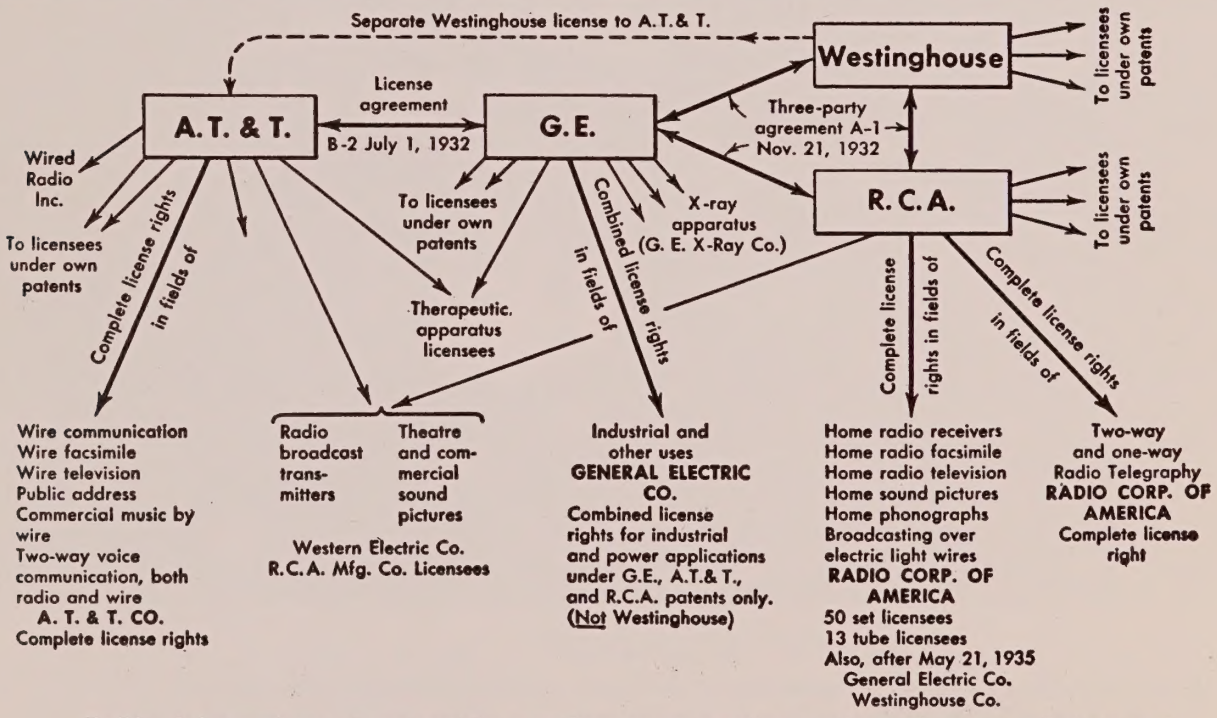
TAYLOR MUSEUM

Pictured is one of the several showcases in the amateur museum operated by Ed Taylor, 245 N. Oakland Ave., Indianapolis, Ind. (46201). It is one of the better mid-west museums. The owner has amassed a wide variety of electrical equipment with emphasis of course on radio. In addition to a fine collection of receivers, Ed has light bulbs, telegraph equipment and a 1500 book library. Like all amateur museums the hours are restricted. Visitors should write or telephone in advance. His telephone number is 317-638-1641



THOSE WERE THE DAYS!

Pictured is OM Blake, W1ARU when he was radio "op" aboard the USCG Cutter MODOC 50 years ago. Old timers will recognize most of the gear including the arc transmitter. Not seen is a 2 KW quench spark set. This equipment was later replaced with a 2 KW tube transmitter in 1925. First tried on a wet foggy night, it dropped the 6 halyards to the deck due to the greater radiation -- 25 amps !



Radio historians frequently ponder over early equipment name plates and wonder who held what patent and who was licensed to do what...The above table may be of some help. It covers cross-licensing between 1920-1940.

(Reprint from "Investions & Innovations in the Radio Industry" by Rupert Maclaurin. Permission from Macmillan Co.)

EARLY RCA EQUIPMENT DESIGNATIONS

Recently, the question arose as to where the designations of the first RCA vacuum tubes for amateur service came from. The early tubes all had the prefix "UV" ahead of the number such as UV-200, UV-202 and UV-203.

The question became more interesting when looking through an early RCA catalog it was noticed that there was a UV-712 which was not a vacuum tube but an interstage audio transformer.

On July 1, 1920, cross-licensing agreements were concluded between the newly formed Radio Corporation, the General Electric Co. and A.T. & T. Co. These agreements included the manufacture by GE and sale by RCA of a wide variety of radio apparatus for "amateur and experimental purposes".

To implement this agreement, it was necessary to decide what apparatus could be made by GE and sold by RCA and to prepare catalog listings and advertisements.

The following information was obtained from two principal sources. The first was Harold Vance, K2FF/4 who joined G.E. in the early twenties and later RCA. The second was William M. Derrick, W2LWO who joined RCA in April, 1920, only a few months after RCA was organized.

In late 1920, a series of meetings were held between Irving F. Byrnes of General Electric at Schenectady and Stanley W. Goulden, Commercial Engineer of RCA reporting to Elmer Bucher, to prepare such a listing of equipment. (Elmer Bucher was former Chief Inspector for the American Marconi Co. and came to RCA as Sales Manager.)

It was in these meetings between Byrnes and Goulden that decisions were made as to equipment to be offered and type numbers of such equipment. The designations used were created and specified by George H. Clark of the engineering staff of RCA. They were similar to those used at the time by the Navy and were also selected so as to be satisfactory to General Electric. They were of course approved by Elmer Bucher.

In the 1921 RCA catalog, the prefix "UC" was used for condensers, "UL" for inductance, "UM" for meters, "UP" for power transformers and resistors and "UV" for vacuum tubes with exception noted above.

It is understood that this exception was at the insistence of Elmer Bucher who felt that anything so closely related to tubes as an interstage transformer should have the same designation.

The first advertisement for RCA tubes appeared in the December, 1920 QST and was accompanied by a Cunningham ad for the same detector tube carrying the Cunningham designation C-300 (See last OTB under "Tube Collector").

This would suggest that work on the new RCA line of radio apparatus was well along by early November, 1920. The first announcement of the RCA UV-202 transmitting tube appeared in March, 1921 QST. The catalog with the new RCA apparatus listed, was announced in September QST. It is interesting to note that much of the apparatus used in the famous 1BGG transmitter in December 1921, was listed in the 1921 RCA Catalog and was quite evidently available at that time.

The work of Byrnes and Goulden for G.E.and RCA expedited the entry of RCA into the field of equipment mechandizing; undoubtedly greatly facilitated the adoption and use of continuous wave telegraphy and telephony by amateurs and probably, in spite of the warning in the front of the catalog, hastened the early development of broadcasting.

Incidently, in later years, Irv Byrnes was Vice-President of the Radio Marine Corporation.

Robert Morris, W2LV

NEED SOME COIL WINDING?

I just bought a supply of small size magnet wire and will undertake the rewinding of audio transformers, earphone coils, etc. on a limited basis. I have rewound electric motors for years but this small stuff is something new and I am "playing it by ear" until I find out what I can handle. Have been successful so far. Swap deals only...
Alan Douglas,Box 225,Pocassett,Mass. 02559

Sylvania Produces Three-Billionth Receiving Tube

Congrats to Sylvania for their enviable record of manufacturing receiving tubes which extends back to 1924 when they made their first receiving tube. The company is one of the few that has been able to weather nearly half century of numerous changes in the electronic field.

THE EMERSON MULTI-VALVE

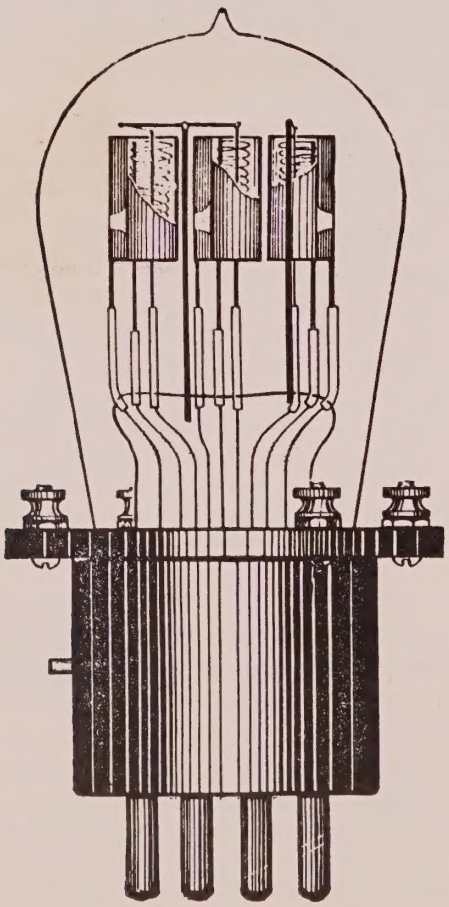
The "Emerson Multi-valve was first advertised for sale on page 1081 of the March 1927 issue of RADIO NEWS. The manufacturer was given as the Emerson Radvil Corporation of New York City.

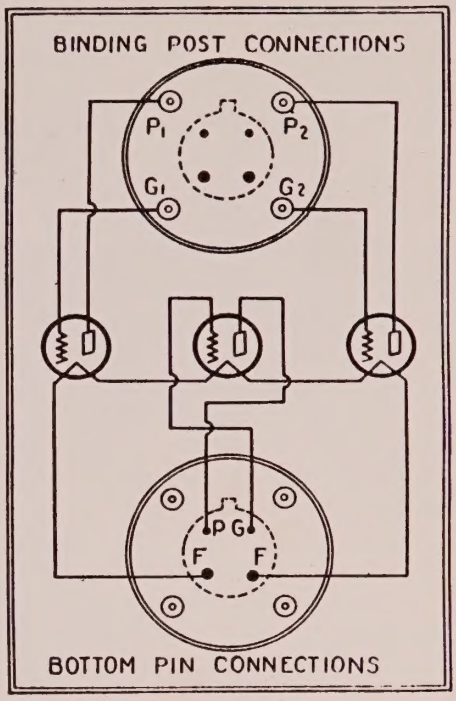
This tube had three triodes in one envelope -- the filaments being connected in series. The total filament power required was 0.25 amp at 5 volts.

As an r.f. amplifier or detector it took 45 volts on the plate. As an audio amplifier it took 90 volts on the plate. In the February 1927 issue of RADIO NEWS is an article by A.J. Haynes describing the use of the tube in a receiver.

The diagram of connections for the tube are shown. This tube was made with both black and maroon plastic base. I have been unable to find an advertisement for it beyond the date of the original announcement in March 1927.

It is also worthy of note that the diagram of the tube connections shown is published courtesy of the Cleartron Vacuum Tube Company.





The great interest generated at the recent Conference Vacuum Tube Symposium brought requests for further information on rare tubes. The next several OTB issues will feature a series of hard to find tubes which may be of interest to the collector.

Inventor of X-Ray Tube Celebrates 100th Birthday

Dr. William D. Coolidge, the scientist who invented the X-ray tube celebrated his 100th birthday Oct. 24 (1973), at his home in Schenectday, N.Y.

The "Coolidge tube" unveiled in 1913, made possible modern medical and industrial X-ray technology. Mr. Coolidge also played a role in the development of the modern incandescent lamp.

(W2NX)

Medal and Diploma received at World's Columbian Exposition, Chicago, 1893.

TRADE ELECTROSE MARK
REG. U.S. PAT. OFF. & FOREIGN COUNTRIES.

RADIO INSULATION

Made in America and Used Throughout the World

Approved By:
U. S. Government, Army and Navy and Commercial Operating Companies

Medal and Diploma received at World's Fair, St. Louis, 1904.

GOOD READING

EARLY CINCINNATI RADIO

is a mimeograph 247 page (8x11")volume written by Joe Rice (W4RHZ) covering the history of radio broadcasting in the greater Cincinnati (Ohio) area.

It is without a doubt one of the most dedicated volumes I've read. Although the author concentrated on the history of broadcast stations in Ohio and Kentucky, he takes time out to tell about early telegraph, police work and radio in general. One does not have to be a local resident to enjoy this book.

DIRECTORY DELUXE

Congrats to Bill Breniman for his 1973 SWP Directory and Call Book. Members agree there never will be another like it. Names are listed in alphabetical order, by call letter, by state and city and finally by membership listing. You just can't miss finding a friend somewhere !

I.E.E.E. HISTORICAL COMMITTEE

We understand the IEEE History Committee, in an effort to more actively collect historical data, embarked on a pilot project last year. Headed by Frank Polkinghorn, retired member of the Bell Laboratory staff, a group of volunteers living around the New York City area were organized for the purpose of collecting and editing tape recordings made by those pioneers who were still alive.

The group plans to interview retired persons who were believed to have contributed significantly to the progress of electrical or electronics engineering.

Any member know of the success of the project. Who and what was taped ?

HOWARD HUGHES

is a name that pops up occasionally in newspaper headlines. Bob Cobaugh, W2NX, has evidence to believe Hughes could have been a radio amateur back in the 1920's.

Hughe's biography by Noah Dedrick, states he and another youth had an amateur radio station in California--call letters could have been 6BAV ?? Any leads ?? Write W2NX.

McMAHON'S 1921-1932 GUIDE

The Radio Collector's Guide by Morgan McMahon is not to be confused with the author's other popular book "Vintage Radio". It is a followup of the original and lists over 9,000 sets with 50,000 facts ! The receivers are listed in alphabetcial order by manufacturer and notes: year made, model number and name, price, number of tubes, power source and type circuit.

Although the author covers sets made between 1921 and 1932, he slips in a few made before 1921 such as DeForest and Adams-Morgan companies.

The first 15 pages summarize the contents and include an interesting cross-reference list enabling the collector to readily determine the manufacturer by trade name. You need not be a collector to enjoy this 264 page book. A real buy for only $3.95

Send check or M.O. ($3.95) to:
MORGAN MC MAHON, Box 2045
Palos Verdes Pen., Calif. 90274

SILENT KEYS

JAMES E. SMITH

92 Years, McLean, Virginia

founder of the nation's oldest home study electronics school, the NATIONAL RADIO INSTITUTE. He founded the school in 1914 which had enrolled nearly a million students in 60 years. (K3CL)

NORMAN WUNDERLICH

(73 years) inventor of the Wunderlich vacuum tube manufactured by Arcturus. See OTB 14-1-16

DON MIX

W1TS (ex-1TS) retired A.R.R.L. Staff Member. Well known for his participation in the MacMillan Artic Expeditions and operator of WNP.

ROY ARMSTRONG (5FA) OT commercial "op" with United Wireless.

JOSEPH BROSLAW (Hempstead, L.I.) well known historian and collector.

GEORGE IJOMA, W8CAQ (ex-4CAQ) Electrical Engineer, U.S. Coast Guard Radio

MAGNAVOX Radio
The Reproducer Supreme

REJUVENATION OF VACUUM TUBES

By: Lane S. Upton
526 11th Avenue
Salt Lake City
Utah 84103

With the ever increasing scarcity of the old tubes, it is becoming more important that we try to save as many as possible. Over the past two years the author has been experimenting with the rejuvenations of these older tube types. This work has been based primarily on present day techniques used at Eimac and on data given in various books published during the 1920's. Using the methods described herein, the author has had approximately 85% success in returning inactive tubes back to useable transconductance. The failures have primarily been due to filaments being burned out during the application of the excessive voltages required. The tubes which failed either had filaments that had been weakened from long hours of operation, or, were marginal at the weld joints. None of these failures were opened for investigation as they are still valuable for display purposes.

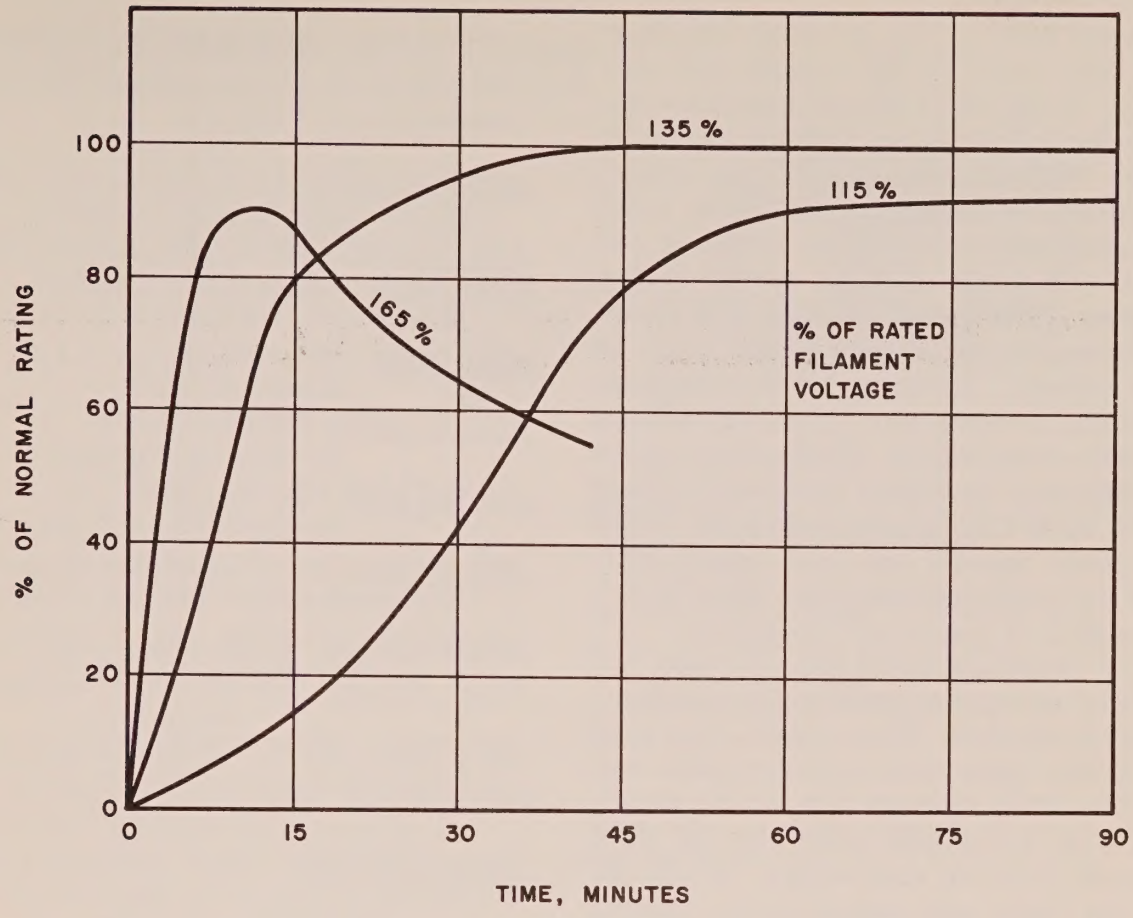
The primary failure mode of these older tube types is a loss of electron emission from the filament or cathode. With the wide interelectrode spacings used in these tubes, a short is very rare except in the case of a broken filament wire of where the oxide has flaked from the filament or cathode and has touched the grid. The loss of electron emission typically shows up in the tube tester as a weak tube or one which will not raise the meter needle. If a tube tests normal and does not show any erratic indication on the test meter, no attempt should be made to improve it by rejuvenation.

The equipment required for rejuvination is relatively simple. In addition to a tube tester, a variable filament supply is required with a meter of reasonable accuracy for measuring the applied voltage. In place of a separate filament supply, a filament voltmeter may be connected to the tube tester and the filament voltage switch and "line" adjustment used for voltage control. For the thoriated tungsten filaments it is preferable that no grid or plate voltages be applied during rejuvenation. With the oxide emitter tube, voltages should be applied during rejuvenation. The removal of plate and grid voltages can be readily accomplished by the construction of an adaptor socket with filament connections only. The voltage applied to the filament during rejuvenation must be carefully controlled to the values given herein. The accompanying graph shows the results of various voltages applied to a thoriated tungsten filament during rejuvenation. It shows that a voltage lower than the recommended value will eventually result in a tube which will remain weak.

Emission loss is generally due to contamination (poisoning) of the emitting surface. The vacuum and the original outgassing of the elements in these older tubes was not near the present day standards, therefore, they contain considerable residual gases. The poor emission usually is the result of either the emitting surface being poor prior to storage, or, immediately upon being heated the filament/cathode was poisoned by the residual gases which had condensed on the emitting surface. The function of rejuvenation is to drive off these condensed gases and to replenish the electron emitting layer on the surface of the filament/cathode.

Vacuum tubes have essentially three basic types of emitters. These are; pure tungsten, thoriated tungsten, or, a directly or indirectly heated oxide. The type of emitter in a given tube can be determined by its operating color at rated filament voltage. The pure tungsten filament operates bright white, the thoriated tungsten filament runs orange to yellow, while the oxide emitter operates in the dull to bright red region.

The pure tungsten filament needs little reactivation as its operating tem-



perature makes it self cleaning. Operation at 110% of rated filament voltage for up to 30 minutes should clean them up. This type of filament was used in such tubes as the UV200, UV201, and in many of the transmitting tube types.

The thoriated tungsten filament is probably the major one to be dealt with by the collector. This filament is a composition of tungsten and thorium with the tungsten acting as the heat source while the thorium is the emitting source. This filament was used in tubes such as the UX200A, UX201A, UV99, UX120, UX210, and in many of the later (and present day) transmitting tubes. Two methods are used for rejuvenation of these filaments. If a tube is only weak or gives erratic readings, the first procedure should be tried. If a tube is completely dead (but the filament lights up) then the second procedure should be used.

1) Operate the filament at 135% of rated voltage for 30 minutes. Test the tube, and if the tube has improved but is still not to rating, continue for another hour. If at the end of this time the tube is still not up to specification, use the following procedure.

2) In this procedure the filament is run white hot to strip the emitting surface completely clean, then the surface is restored using the above procedure. Operate the filament for 15 to 20 seconds at 350% of rated voltage with no other voltages applied. Then, operate the tube under the conditions given in the first procedure. Test the tube every 30 minutes, and, if the tube is not up to rating after two hours it has reached the end of its useful life.

Typically the oxide emitter consists of a layer of strontium and/or barium oxide deposited on a heated surface. In the directly heated type, this layer is placed directly on the surface of the filament. Typical of this type are the Western Electric tubes such as the VT-1 and VT-2 and the WD11, UX226, and UX280. The indirectly heated cathode is the more modern type of emitter consisting of a metal sleeve with the oxide layer on the exterior and the filament mounted in the interior. The indirectly heated cathodes include the ac heater types such as the 24, 26 and the Kellogg tubes. These tube types should initially be operated at rated

(Continued on next page)

filament voltage for at least one hour and then checked for quality and stability. If they still are not satisfactory, then the following procedure should be used. With the tube in the tube tester, increase the filament voltage to 120% of rating while carefully watching the plate current or tube tester meter reading. The meter reading will slowly increase, hit a peak, the start to decrease. At the point of maximum reading, reduce the filament voltage back to rated value. Continue to operate the tube at rated filament voltage for at least four hours, then test. When two tests spaced one hour apart provide the same reading, the tube is rejuvenated as much as is possible.

The rejuvenation of the old tubes can be very rewarding especially considering that some of them would otherwise be in the junk box. It does take time for this work as there are no short cuts, but it is something that can be done without constant attendance. While not all the tubes will come up to 100% of rating, at least many tubes can be brought up to the point of being useable. As these old tubes become more scarce this may be the only way we will have of getting the old sets operating.

About the author:

Lane Upton is a test equipment engineer with Eimac Corporation, Salt Lake City, Utah. His engineering position places him in an excellent position to be familiar with vacuum tube design.

A.W.A. WELCOMES THE FOLLOWING OVERSEAS MEMBERS:

JOHN LUDLOW (Bowdon, England) retired from Manchester Research Labs, vacuum tube historian and author of "Evolution of the A.C. Maius Radio Valve".

BASIL VAN DER SYDE (Poole, England) Former aircraft and color TV engineer. He has a small private wireless museum.

GREBE IN AWA ----

Charles Meir (Phoenixville, Penna.) is a new member who has great interest in historical radio-- maybe for good reason since his grandfather is the late ALFRED H. GREBE !!

NEW MEMBERS

who are or have been in the communication field.....

JAMES McDERMAID (Salt Lake City, Utah) Chief Studio Engineer KUTV

JOHN NOWACKI, K8VZU, Physics teacher

FRED PROHL (Indianapolis, Ind.) Electronics Instructor I.V.T.C.

AIAN SMITH Staff Member of M.I.T. Radiation Lab

MICHAEL BREEN (Nashua, N.H.) Electrical Engineer

JIM VAN SANT (Smyrna, Ga.) Electronics Instructor

JOHN LUDLOW (Bowdon,England) Manchester Reasearch Lab of Metro-Vivk,England

HAROLD NELSON, W5ZIR, Texas Instruments

HARRY WATKINS, WB4CRH, Two-Way Radio Service Co.

TOM TURNER, K8VBL U.S.N., I.E.E.E.

ART KINGSLEY (Highland Falls,N.Y.) TV and Electronics

ROBERT WESTCOTT, W2MAS, Electronic Technician

GEORGE PEPPER, W3EGC, Philco, Radio Stations WBAB, WFPG

JAMES GUIDA, W3KE, Naval Research Lab.

CECIL HAGGARD, K4MNZ, Larry's Electronics

LEONARDT KREISLE (Austin, Texas) Prof., Univ. of Texas

CAPT. CHARLES BIELE, W2AOS, ex,3ABZ, 8CRQ, KZ5CB,DL4YH, etc. Commer. oper., U.S.N., NBH, NPN, NAI,etc.

RICK BRANT (Witchita, Kans.) Stat. KSRH

WESTLEY CHATELLIER, W5DPM, ex-9NJN, Ft. Monmouth Signal Corps

ROBERT YOUHAS (Parsippany, N.J.) Bell Labs

CHARLES LARRABEE (Waldoboro, Maine) RCA International and G.E.

JAMES FISK, W1DTY, ex-K4RPW, K3CJP, KR6JF, KA9MF, HL9KT,WA6BSO Editor "Ham Radio" magazine

CAPT. ROBERT ROAD, U.S. Military Academy, West Point, N.Y. Prof. Electrical Engineering

JOE RICE, W4RHZ (ex-8MFM) BC Engineer

DEAN ALMANDINGER (Orlando, Fla.) Station WFTV, Motorola,etc.

RAY BURLESON (ex-3BCW) CAA, FAA, WMAL Jenkins TV, etc.

GREGORY GALLO (Binghamton, N.Y.) Communication Super. U.S. Navy

RESTORING OLD EQUIPMENT

How did you SOLVE a problem when restoring an old receiver ? Drop us a note telling how you did it.

HOLES IN PANELS

It is appropriate an article be written on the subject of filling in holes in bakelite panels since the majority of our members restore old equipment. Much to our surprise, a short query in the last OTB brought four excellent solutions -- all different!

Doug Bullock (Augusta, Ga.) suggests the use of an industrial black epoxy paste called Compound #201 (available from Epoxylite Corp., 42 Breckenride Street, Buffalo, N.Y. 14213) which sets up with the addition of Catalyst #301. The material hardens in approx. 24 hrs. to the point of machinable metal.

He suggest you lightly sandpaper inside the hole and then clamp a small piece of glass lightly over the hole on the front side of the panel. This provides a smooth surface and at the same time allows one to see if there are any air holes. Removing the glass after hardening shows little evidence of a hole. Panel is then finished in conventional manner.

Al Douglas (Pocasset, Mass.) recommends Twin-Weld epoxy because it is thick and does not flow easily. He colors the epoxy black by obtaining charcoal dust from sandpapering a briquet although other means are available.

Fill the hole and then sand down flush with 220-grit silicon carbide paper with water. Smooth the surface with 400 and then 600 grit. Pumice and water will also do. Final polish with rottenstone or Vista car wax. It is usually advisable to re-work the entire panel for even finish.

Al Woody, W7WQ (Winslow, Washington) has been engraving and working on panels for broadcast use for over 40 years and finds sealing wax of various colors (such as used by furniture refinishers) will do thetrick. Melt the end of the stick lightly with a small flame and let it drop into the hole until slightly above the surface. When cold, trim down and finish to the surface with a razor blade.

If the panel has a satin finish, do the final finishing with fine sandpaper and rub the entire panel; then oil or wax lightly. If the panel has a polish surface, hold a lighted match or the point of a soldering iron over the repaired section until the surface of the sealing wax flows. At that split second, remove the heat and the wax will cool to a high polish.

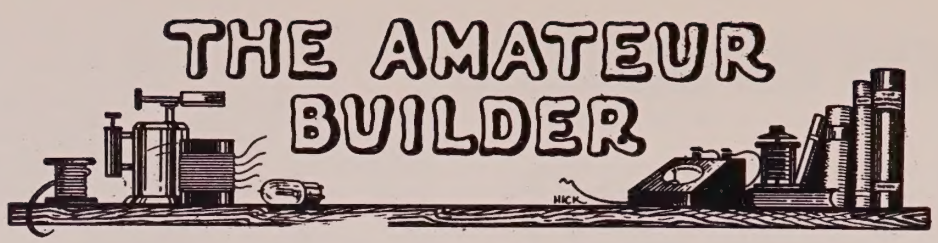
And finally, Orel Orvis, W2MAB (Deposit, N.Y.) came up with an entirely different approach. Holes to 3/16" dia. may be filled by tapping and inserting a black nylon screw from the rear. Tap ¼-20 in 3/16" hole, etc. Various steps are advisable to obtain as smooth a surface as possible:

To obtain a snug fit, tap the hole slightly undersize. Numbered serial taps, as #2, or a tapered starting tap will accomplish this easier than limiting the depth of insertion of a standard hand or machine tap. If you overdo, there are various cements available.

An important step for a smooth finish requires squaring off the screw end before inserting into the panel tapped hole. To accomplish this, tap a hole in scrap stock (such as mild steel), thread the screw thru to protrude one full thread and file flush. This eliminates the hollow tip and the first thread which is tapered.

Remove the prepared screw and insert into the rear of the panel until flush in front and cut off. Cement if needed. As further precaution, file a couple nicks on the inner rear edge of the hole and "flow" the nylon screw stub with a soldering iron.

With very large holes -- insert a bezel and pretend that's the way you wanted it anyhow!



REPAIRING CELLULOID

I recently repaired a Burns horn with a black celluloid morning glory bell which had a crack and a 1" chip out of it. Ordinary glue will not make a strong bond to this plastic in thin sections (I tried them all) but a crack can be easily repaired by pulling the broken parts together with tape, wire, rubber bands, etc. putting a few drops of acetone in the crack and letting it flow by capillary action, then setting aside the piece for a few hours to dry. Be careful not to get any acetone on the polished surface as it will dissolve and mar it instantly.

To repair the chipped section I needed a new piece of black celluloid to glue in place. I tried black plexiglas and it didn't hold. I made my own celluloid sheet by stripping the plastic coating from an old radio transcription record (which is the same plastic,that is cellulose nitrate), dissolving it in acetone to form a lacquer, then pouring out a thin layer of the lacquer on a sheet of plastic and letting it harden and adding more layers of lacquer in the same way until the sheet was thick enough. I cut a matching chip from my new sheet and glued it in place as noted above.

The newly-replaced chip had a rough surface, so, after setting it aside a few days to harden, I brought back the smooth high-gloss finish by a sanding process: First, sand the entire surface level with 220-grit waterproof silicon-carbide paper and water with a rubber sanding block. Next, sand with 400-grit paper and then 600-grit. There should be no scratches visible at this point, just a dull sheen. Next, rub the surface with a paste of rottenstone and water on your finger. Finally, a rubbing with Vista car wax brings back the high gloss and the patched section is indistinguishable from the original.

I can supply small amounts of any of the above materials free (providing I don't get too many requests) -- you will have to supply the time and patience !

Alan Douglas, Box 225
Pocasset, Mass. 02559

RESTORING OR BUILDING??

A source of components is Modern Radio Laboratories operated by Mabel and Elmer Osterhoudt who have been in business for many years.

Thumbing through their most recent sales list I found hundreds of hard to find items reasonably priced such as: DCC and enameled wire, screws, lugs, banana plugs, plug-in coils,porcelain knife switches, I.F. transformers, galena crystals, crystal detectors, knobs, square rods and sliders for tuning crystal set coils, condenser shafts and couplers, mica condensers, panels, tubes, etc.

Obtain their catalog. Send 25¢ for mailing costs and judge for yourself.

MODERN RADIO LABORATORIES

P. O. Box 1477

Garden Grove, Calif. 92642

A GOOD TIP

NEVER exchange a power output tube with the power on. Voltage upsurge may damage the transformer or condenser in older sets....

(Frank Pagano)

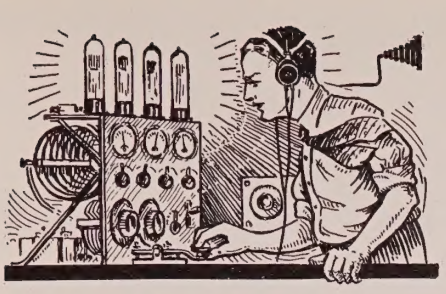
NORWEGIAN MUSEUM

Members visiting Oslo, Norway this coming year will find the Norwegian Resistance Museum a fascinating place. The visitor will see a wide range of equipment and artifacts plus an unusual assortment of WWII clandestine radio gear used by the underground.

(W9IWI)

THE TUBE

is not obsolete-- at least with audiophiles. Reports from Japan (where there are thousands of hi-fi buffs) indicate they prefer tube amplifiers to solid state. This has upset many manufacturers and distributors who are trying to phase out vacuum tubes. In fact, in some areas there is a tube shortage !



NET OPERATION

Send all old time transmitter activity and net operation news to: Ken Gardner, W2BGN
42 Oakdale Ave. S.
New Hartford, N.Y. 13413

A.W.A. CONFERENCES such as the recent one held in Canandaigua, N.Y. afford that most pleasurable experience of greeting an old friend; shaking hands with a celebrity perhaps for the first time or meeting face to face the person behind the key or mic (long familiar over the air). These preliminaries often lead to a prolonged dialog about old times, old equipment or a trip to the parking lot to make a deal. And so, that's the way the first few sessions are slow getting under way. Excellent reasons tho !

Have you noticed how practically everyone attends all the sessions -- regardless of his special interests ? We of the operating group wish more collectors would join us on air activities and judging by questions and discussions, this is likely to happen.

OLD TIME TRANSMITTER operators are now thinking of adding old time receivers because in the last two contests an extra multiplier really boosted the scores of a brave few. Take advantage of the 4:00 PM Net, daily on 3584 Kc. to test old gear this winter. Lack of QRM and higher signal strengths at this time are good to test simple receivers. Add a thin aluminum foil to the back of the panel (if it is bakelite) and a fine vernier or band spread condenser and it is surprising what a simple regenerative receiver will do.

NEWCOMERS ARE POPPING UP on the AWA Nets. W2ZK of Antartic fame, W2LEL who is Secretary of the Elmo Pickerill Chapter of SWP, two old timers -- W1AB and W1ABY, W3DIG (presnt tense of 3DUG) and QST antenna match man -- W2DU. Join us often on 3902 and welcome.

THIS PAST SUMMER Bruce has been operating from his camp as W2QCP near Boonville, N.Y. and from the official AWA station W2AN. W2ICE is a winter station. When not travelling (searching for antiques), Linc has put W2QY on both CW and fone nets and now that he is retired, Chuck finds more time for K2WW.

AS SAID before, Hams are a travelled lot. W4JT mobiled out to Kansas, W2AXX was portable from Inlet, N.Y. and W8AQ operated portable at Wells Beach, Me. all on AWA Nets. Members from all over the States and Canada zeroed in on Canandaigua with 2 meter and LW gear in their cars.

AFTER Canandaigua we received requests for 3584 Kc. crystals from W2BG and WA2DYP. Let's hear more about your OT xmtrs.

A SUCCESSFUL contestant in all AWA CW meets is W2ARX's UX-201-A TNT. Harry is now going QRP by replacing the 201-A with a 199 with maybe 45 volts on the plate. If it will oscillate with less E_p- he will surely try a QSO. Look out for your record Windy (8GZ) !

JACK GRAY'S MUSEUM

Good news ! The Trustees of Jack Gray History of Wireless Museum have completed arrangements with Mr. Charles W. Vaughan, General Manager of WCET, Educational TV station in Cincinnati to include the Antique Wireless Museum in the new studio building now planned for completion in December, 1975. Further details will follow as plans are developed.

The Gray Museum Board consists of John Bruning W8DSR, Jim Rockwell K8RR, Elmer Schubert W8ALW, John Swisher - WA8PYR, Jack Thornell W8BZN, Charles Williams WA8AXQ and Phil Winters K8THT.

The group organized a display of the equipment including early broadcast transmitters, amateur equipment and crystal broadcast sets at the Ohio Sate Fair this past August 23 through September. The display was under the auspices of the Cincinnati Gas and Electric Company with an attendance of over 165,000 visitors.

Jack would have been very proud of all this activity. The Board deserves great credit. OM Gray was a charter A.W.A. member. He became a Silent Key in 1970.

RECENT RADIO and ENTERTAINER OBITUARIES

PAUL GODLEY

84 YEARS, OCT. 22, 1973

Honorary A.W.A. Member and one of the last pioneers. An endless career starting as ship operator with United Wireless. He was engineer and partner in the Adams-Morgan Co. and was instrumental in the design of the famous Paragon line including the RA-10. To the amateur, he his best known for his work in the famous 1921 Trans-atlantic Tests.

Harry Secor 1889-1973

We regret to announce the death on May 17 of the oldest Gernsback editor (both in age and in length of service), Harry Secor. He died shortly before his 85th birthday and had been employed in the Gernsback organization over a span of 54 years.

Old timers may remember the byline H. Winfield Secor which first appeared in *Modern Electrics* around 1910 or 1911. He became an employee of Hugo Gernsback in 1913 when he joined the staff of the *Electrical Experimenter*. In 1915, with S. Gernsback and Austin Lescarboura, he co-authored the pioneer radio text: *Wireless Course in 20 Lessons* which was published by the Electro Importing Company. In the 20's he was on the staff of *Science and Invention* and in the 30's he was the managing editor of *Short Wave Craft* and, for a brief period in 1941, the managing editor of this magazine when it was still called *Radio-Craft*.

During the post-war years and up until his retirement in 1967 when he reached his 80th birthday,

A. Pletman dies; Lafayette founder

73 Years, New York City

Abraham Pletman founded Lafayette Radio in 1920 and soon after Wholesale Radio Service to deal with radio parts. By the early 30's he was making equipment under the Lafayette name.

In time the organization had branches in 14 states, 86 company-owned stores with more than 360 franchised operations.Many amateurs and set builders are familiar with his mail order catalog-- in fact, Wholesale Radio and Allied Radio catalogs are now highly prized by the collectors. (Tnx W2NX)

Carman R. Runyon Jr., 80, Dies; Beamed First Public FM Signal

Carmen R. Runyon Jr., a pioneer in the development of FM radio, died yesterday. He was 80 years old and lived at 130 East End Avenue.

In 1934 Mr. Runyon helped his long-time associate and friend, Maj. Howard Armstrong, the inventor of frequency modulation reception, by building the first operating FM station in his home at 544 North Broadway, Yonkers.

From this station, which was known as W2AG, Mr. Runyon beamed the first public FM signals to a meeting of the Institute of Radio Engineers at the Engineers Building on 39th Street in New York on the evening of Nov. 5, 1935, the day Major Armstrong revleaed his discovery to the world.

Mr. Runyon was the founder and president of Radio and Engineering Laboratories, the first concern to be licensed to manufacture FM equipment under the Armstrong patent.

He was one of the earliest amateur radio operators, licensed in 1909, and a founding member of the Radio Club of America. He was also a member of the Institute of Radio Engineers, which awarded him the Armstrong Medal in 1948 for contributing to the development of radio.

ADDISON W. BEIDEMAN

Radio Man On 1st Flights Over Oceans

Lt. Cdr. Addison W. Beideman, a retired Navy officer who was a pioneer in both transatlantic and trans-Pacific aviation, died Tuesday at Bethesda Naval Hospital after a heart attack. He was 68.

Cdr. Beideman was the chief radio operator on the Pan American World Airways China Clipper that made the first commercial flight across the Pacific in June, 1939. Four months later Cdr. Beideman served in the same capacity aboard the first transatlantic commercial flight

Retired Chief Engineer Of WMAL, Allan Powley

Allen T. Powley, 69, former chief engineer of WMAL radio and television stations, died Wednesday of cancer at Suburban Hospital, Bethesda.

Since his retirement in 1967, he had lived in New Smyrna Beach, Fla. He had been with the Evening Star Broadcasting Co. from 1947, serving the last 13 years as chief engineer.

Born in Utica, N.Y., Mr. Powley grew up in Kingston. He was a wireless operator on merchant ships and began his career in radio with station WOR in New York City in 1926.

Two years later, he joined Fox-Movietone News and recorded the first sound track of a presidential inauguration at the inaugural of Herbert Hoover.

During his years with Fox-Movietone, the National Broadcasting Company and WMAL, he covered major news events involving Presidents Roosevelt, Truman, Eisenhower, Kennedy and Johnson.

During World War II, while with NBC, Mr. Powley was responsible for the technical arrangements for President Roosevelt's fireside chats.

He had served as president of the National Association of Broadcast Engineers and Technicans in 1945-47 and was a charter member of the Broadcast Pioneers Club.

50TH ANNIVERSARY QSO LISTING

(All stations are listed as postmarked except the oldest.)

Oldest Anniversary QSO

W6LM (XRK) -- W3SRI (PRK)
1910 - 1973
61 years

W1TH (2TS) -- W9CP (9CP)
1921 - 1971

W2AFE (8AFE) -- W2YL (8HJ)
1922 - 1972

W2AXX (8AXX -- W1TH (2TS)
1922 - 1972

W2QY (8ADI) -- K2BOK (8ABA)
1916 - 1972

W8TE (8TE) -- W8KP (8ASF)
1916 - 1972

W4ZM (8AQM)-- W2YL (8ALK)
1915 - 1972

W2VW (8VW) -- W4ZM (8AJ)
1921 - 1972

W2ZI (2ZI) -- W2LV (2CQZ)
1922 - 1972

W2LV (2CQZ) -- W8CI (8CI)
1922 - 1972

W2FG (RD) -- W2AG (YS)
1909 - 1959

K4PI (3PI) -- W3PN (3PN)
1914 - 1964

WØDC (9DC) -- W9CP (9CP)
1920 - 1972

W2EB (8PK) -- W3FJU (3BLP)
1923 - 1973

W1AOG (1AOG)--W1BWN (1BWN)
1921 - 1972

W6AX (6AX) -- W6NG (6NG)
1922 - 1972

W8AQ (1AAC)-- W1BXH (1BXH)
1923 - 1973

W1BVL (1BVL)-- W8AQ (1AAC)
1923 - 1973

W8BKM (8BKM)-- W9IW (8VF)
1921 - 1971

W2BG (2BG) -- W8AQ (1AAC)
1923 - 1923

W2WS (2BCK)-- W8AQ (1AAC)
1923 - 1973

Send all Anniversary Listings to: Ken Gardner, W2BGN
42 Oakdale Ave., S.
New Hartford, N.Y. 13413

(See OTB 13-1-21 for details)

Notes from the President's Desk

I was glad to see so many at the Conference in Canandaigua where we all had a wonderful time. I hope you will return next year.

In regard to our museum, negotiations have been under way with the East Bloomfield Historical Society for use of part of their building. This would provide additional space but would not completely eliminate use of the Barn. However, it would greatly improve our display and safe-keeping of historical radio gear. At present we are not completely in agreement with the Society regarding some details, so no formal papers have been signed. Concurrently, we are continuing to look for other and better facilities to house our museum.

More contributions to our Museum Fund have been received recently. They are in amounts ranging from twenty-five to two hundred dollars. The Fund is increasing and will be needed one of these days to establish the new museum. At that time more money in sizeable amounts undoubtedly will be required. In the meantime additional tax-free contributions to the Fund will be most welcome.

I was unable to attend the New England Meet but I hear that Bob and Nancy Merriam as usual were very cordial hosts and all present had a very enjoyable time. Thanks and congratulations to Bob and Nancy for hosting this Meet.

Chuck Brelsford

ANTIQUE WIRELESS ASSOCIATION

MUSEUM

HOLCOMB, NEW YORK 14469

Member:
AMERICAN ASSOCIATION OF MUSEUMS
Affiliate:
AMERICAN RADIO RELAY LEAGUE

The A.W.A. provides facilities for member's equipment and a photographic workshop for the amateur historian.

Open for special events or by advance appointment between May 1 and October 31. No charge.

TELEPHONE: 315-657-7489 or
716-663-0856

Club Radio Station: Amateur W2AN

RCA INSTITUTE PHASE OUT

At this writing, plans are underway to close the RCA Institute, one of the nation's oldest radio schools. Rising costs (it is a non-subsidized private school) and dwindling enrollment is forcing the RCA Corporation to phase out the operation after 64 years of continuous service.

The school was founded by the Marconi Wireless Telegraph Company of America and has graduated over 30,000 students. In the early years courses were centered on commercial operation; however, present day curriculm covers all phases of modern electronics.

Many AWA members attended the school and several remember Elmer Bucher when he was associated with the Institute (about the time when Marconi interests became part of the Radio Corporation of America).

Shown are ads from an old QST of several other well known radio schools some of which are still very active and others only a memory, (W2NX)

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Washington, D.C.

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4 West 63rd Street, New York City

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Radiotelegraphy Radiotelephony
Radio Servicing
SECOND PORT U. S. A. 1007 Carondelet Street NEW ORLEANS, LA.

RADIO INSTITUTE OF AMERICA

TRAINING IN ALL COMMERCIAL BRANCHES OF RADIO

(formerly Marconi Institute)
Established 1909
Conducted by
THE RADIO CORPORATION OF AMERICA